# DYNACOMP

**$1.00 U.S.**

## Catalog No. 27

- *Over 200 new programs*
- *Public domain programs*
- *Library Rentals*

*Quality Software for Microsystems*

- ALTOS
- APPLE II
- ATARI
- CANON AS-100
- COMMODORE
- COMPAQ
- 8" CP/M
- HEATH Z-100
- IBM PC
- KAYPRO
- MORROW
- NEC PC-8000
- NORTH STAR
- OSBORNE
- SUPERBRAIN
- TRS-80
- CASSETTE
- 16K
- 24K
- 32K
- 48K
- DISKETTE

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## ABOUT THE DYNACOMP CATALOG

The DYNACOMP catalog is unique in its format, size, detail, and scope. It has evolved into its current form after several years of experimentation. The three issues which have caused the most concern are the print size, paper stock, and mailing classification. Here is our reasoning.

PRINT SIZE: Admittedly, DYNACOMP uses *small* type. That way we can supply more information regarding our products than is usually available in software catalogs. Scaling up to an 8½" x 11" format would be expensive: to mail such a catalog first class mail would cost an extra $1.00 *per catalog*. One of the iron rules of business is that the consumer always ends up paying for the costs of doing business (where else does the money come from?). We decided that you would prefer low prices over larger type.

PAPER STOCK: DYNACOMP's catalogs are printed on what is called a *web press*. This is a high speed, large volume printing machine. The same press is used for producing Rochester's local newspapers. Naturally it likes to be fed large rolls of newsprint — that is what it was built to eat! It is possible to run other types of paper on such a press, but the increase in cost is surprisingly large.

MAILING: DYNACOMP sends its catalogs by bulk mail. Using first cclass mail would cost roughly 70¢ more *per catalog*. You may have a catalog sent to you by first class mail for $2.00 (to cover postage and special handling).

ORDERS are sent by first class mail (our preference) or by United Parcel Service.

## DYNACOMP EXPANDS AGAIN!

Effective October first (1984), DYNACOMP's general offices for processing orders will be located at DYNACOMP, Inc., 1064 Gravel Road, Webster, New York 14580. This is a much larger and more modern facility than our Monroe Avenue location and is a welcome relief to the crowding in our two Rochester locations. Please place your orders through the Webster office.

In 1985 we will be closing the Monroe Avenue office. The other Rochester location will remain indefinitely. For example, written catalog requests, address changes, etc., should be sent to: DYNACOMP, Inc., P.O. Box 18219, Rochester, New York, 14618.

There will be no changes in the customer service phone lines *except* that two *more* have been added (see the bottom of the order form). There are now two toll-free order numbers and four customer service lines.

We have come full circle. Webster, a suburb of Rochester, is where DYNACOMP started!

### DYNACOMP SPECIAL ORDER FORMATS

DYNACOMP now has the facilities to provide, on special order, copies of its CP/M programs for the 5¼" formats shown below. The copying charge is $5.00 per diskette. Add an additional $3.00 to the catalog diskette price for double-density diskettes.

| Single-Sided Format | Double-Sided Format |
|---|---|
| ACTRIX | ACTRIX |
| CROMEMCO CDOS (SD) | CROMEMCO CDOS (SD) |
| CROMEMCO CDOS (DD) | CROMEMCO CDOS (DD) |
| DEC VT-180 | DATAVUE |
| LOBO MAX-80 | EPSOX QX-10 |
| SUPERBRAIN JR. | HP-125 |
| TI PROFESSIONAL (CP/M-86) | IMS 500 |
| XEROX 820 (SD) | MAGIC |
| XEROX 820 (DD) | NEC PC-8801 |
| ZENITH Z-90 (W/48 TPI) | OTRONA ATTACHE |
| ZENITH Z-100 | SANYO |
| | TELEVIDEO |
| | TOSHIBA T-100 |

## HERE'S WHAT DYNACOMP'S CUSTOMERS SAY ABOUT OUR PRODUCTS AND SERVICES

---

**From a first-time customer . . . .**

"I was very impressed by your prompt service and the quality of your product. It is nice to see that a mail order company can be both reputable and efficient."

*Dr. A.R.B., Madison, Wisconsin*
*Personal Finance System, Osborne*

**From returned registration cards . . . .**

"Excellent. My 3½ year old really enjoys it!"

*B. Y., Kendall Park, New Jersey*
*Hodge Podge, Apple*

"Fantastic."

*P.W.S., Boulder, Colorado*
*Children's Carrousel, Apple*

**From a repeat customer . . . .**

"I received the blank disks and Personal Finance System yesterday afternoon. As in the past, I was pleased with the products and with the rapid, accurate service."

*A.R.W., Norfolk, Virginia*

**A customer with a catalog "problem" . . . .**

"Just got my CELESTIAL BASIC program disks and they're great! . . . Everybody is borrowing my software catalog — please send me another copy."

*P.K., Waynesboro, VA*

**And from a customer with a problem . . . .**

"The replacement BRIDGE MASTER disk has been received. Your service is excellent and superior to other mail order houses! Please feel free to use this statement at any time."

*R.C. Meaders, Camarillo, California*

# COMPUTERS AND REQUIREMENTS

| | |
|---|---|
| ALTOS | CP/M and MBASIC (8" drive version only) |
| **Apple II:** | **Applesoft BASIC (Apple II plus, e, c, and compatibles)** |
| Atari 400/800:* | Atari BASIC cartridge, 16K/24K |
| CANON AS-100 | MS DOS and MBASIC |
| Cromemco | CDOS and BASIC (8" drive version only) |
| **8" CP/M** | **Required: IBM 3740 disk format compatability. Also required: MBASIC (except for EBASIC, CRANSTON MANOR, DYNAFORTH and IRON CLADS, which require only CP/M).** |
| Heath/Zenith Z-89 | CP/M and MBASIC |
| HEATH ZENITH Z-100 | ZDOS and ZBASIC |
| **IBM PC / PC Jr.** | PC DOS or MSDOS, and BASIC |
| KAYPRO II | CP/M and MBASIC |
| MORROW DESIGNS I, II, III | CP/M and MBASIC |
| NEC PC 8000 | NBASIC or MBASIC (state which) |
| North Star: | 5¼" Diskette, North Star DOS and BASIC and 16K of free memory or CP/M, MBASIC and 16K of free memory |
| Osborne | CP/M and MBASIC |
| PET/CBM:** | 16K Commodore BASIC |
| Super Brain/Compustar | CP/M and MBASIC |
| TRS-80:*** | 16K Level II BASIC, Model I, III, or IV. |
| XEROX 820/820 II | CP/M and MBASIC |

* Most Atari programs require 24K. Those that will run in 16K are so marked in the catalog

** PET/CBM diskettes come in 4040 (2040) and C-64 format. They cannot be loaded on 8050 disk drives.

*** TRS-80 diskettes do not come with TRSDOS or BASIC on them.
All TRS-80 programs will run on the Model III and IV with the exception of TIDY, GRAFIX, CRIBBAGE and CHESSMASTER. Model I to Model III conversion program is required for diskettes.

ALTOS, Apple, Atari, CANON, CP/M, Cromemco, Heath, IBM, KAYPRO, MBASIC, MORROW, NBASIC, NEC, North Star, Osborne, PC-8000, PET/CBM, SuperBrain, TRS-80, XEROX, and Zenith are tradenames and/or trademarks.

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(800) 828-6772 Order Phone (outside NY only)
(800) 828-6773 Order Phone (outside NY only)
(716) 671-6160 Office Phone (9 a.m.'til 5 p.m. E.S.T.)
(716) 671-6167 24-hour order and message phone.

# AVAILABILITY AND PRICES

**WHICH COMPUTER?**

DYNACOMP distributes programs for all of the computers and systems listed on the facing page. However, not all programs run on all computers. To avoid confusion, we have chosen a consistent way of indicating which runs on what. This information accompanies the description of each program, and is also shown in the availability tables.

Beneath the title of each program description is a simple caption having one of four forms:

1. "X, Y and Z only"
2. "available for all computers"
3. "available for all computers except X, Y and Z"
4. "CP/M only"

The meaning of the first form is self-evident. The second one means all of the computers listed on the page. The third form means all of those computers except "X, Y and Z". The fourth notation ("CP/M only") is a shorthand for the following

> CP/M=Osborne, North Star CP/M, SuperBrain, NEC PC 8000 CP/M, KAYPRO II, MORROW DESIGNS, HEATH ZENITH Z-100, HEATH ZENITH H-89 8" CP/M, CROMEMCO, ALTOS, XEROX 820, IBM PC/PC Jr., SANYO (with MS DOS), PANASONIC, COMPAQ Z or BA, CANON AS-100, DEC RAINBOW 100 (with MS DOS), and other CP/M IBM 3740 systems.

Except for the programs listed on the facing page, "CP/M only" also means that Microsoft BASIC must be loaded.

**WHICH CP/M?**

DYNACOMP's CP/M-Microsoft BASIC programs are compatible with CP/M single density versions 1.4, 2.2, and MP/M, and with Microsoft BASIC versions 4.51 (and older), 5.2 and the BASIC-80 interpreter. No special printer or screen graphics capabilities are required.

**SINGLE DENSITY/DOUBLE DENSITY**

DYNACOMP recommends that if your computer accepts both single and double density diskettes, you should order the software you want in the single density format and later convert it to double density. If you want double density, add $3.00 to the diskette price shown in the program description.

The exceptions to this recommendation are the North Star Advantage and Osborne-1 double density model. The North Star Advantage will simply not read single density disks. The Osborne-1 double density system does, but with perhaps 90% reliability. We *strongly* recommend that double density disks be ordered for both of these machines.

**HOW MUCH MEMORY IS REQUIRED?**

A point of possible confusion is how much memory is required to run a particular program. Unless otherwise stated, all of DYNACOMP's programs will run in "16K of program memory" for all machines "except the Atari which requires 24K." (Several of DYNACOMP's Atari programs will run in 16K and are so marked.) This means that for an Apple II Plus disk system, 32K is required (so that at least 16K of memory is available after the disk-operating system is loaded). For a CP/M system, the 16K refers to how much memory is free for use after BASIC has been loaded.

**AND THEN THERE IS THE COMMODORE**

PET/CBM programs are available on both cassette and diskette. However, the diskette versions can be loaded only using 2040, 4040, and Commodore 64 disk drives. For those having 8050 drives (or wishing to save money), the cassette versions may be loaded and saved on diskette.

**PACKAGE PRICES**

There are several groups of software packages which naturally form sets. Examples include the three Fourier analysis programs, the three regression programs, volumes I and II of BASIC SCIENTIFIC SUBROUTINES, the NSSE library and others. DYNACOMP offers each of these groups at a reduced package price. These reduced price packages *DO NOT* count toward the 10% and 20% quantity discounts indicated on the order form.

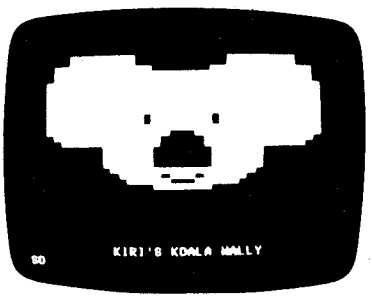
## HODGE PODGE
(Apple, TRS-80, and Atari only)

HODGE PODGE is a computer "happening" for children from ages 18 months to seven years and older. It is a surreptitious learning device which provides knowledge in a most enjoyable (and non-intimidating) fashion. The program consists of many cartoons, animations, and songs which appear when any key on the computer is pressed. Each key provides something different for the child to explore, from Apples to Zigzags. With an adult present the child can be told about magnets, numbers, musical notes, animals, up and down, color, and much, much more. When alone the child will be kept endlessly amused by the color, sound, and wonderful pictures displayd by HODGE PODGE. This program is a must for any family containing children and a suitable computer. Note: the TRS-80 version does not have the sound feature of the Atari and Apple versions. Apple and TRS-80 versions require 48K; Atari cassette version requires 32K, diskette version requires 48K.

See the reviews in *Softalk* and *Infoworld*.

Price: $14.95 Cassette
$18.95 Diskette

Sample display (Apple):




See the review section for more information.

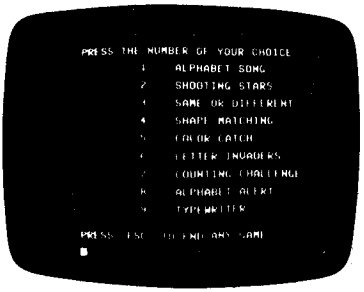
## CHILDREN'S CARROUSEL
(Apple and Atari only)

DYNACOMP's HODGE PODGE was such a great success that we decided to produce another package aimed at the pre-school child, CHILDREN'S CARROUSEL.

CHILDREN'S CARROUSEL is composed of nine menu-selected games which have great color and sound (including the carrousel and alphabet songs). The games include matching shapes, counting, letter recognition and more. It has been "field tested" with many children. We are very proud of this one!

Price: $19.95 Diskette

Sample display:




See the REVIEWS section for additional information.

CHILDREN'S CARROUSEL is a great present for a young child, and may soon outsell even DYNACOMP's HODGE PODGE!

## CLOZE READING COMPREHENSION
(Pet/Commodore only)

The CLOZE READING COMPREHENSION series is a set of 16 programs, on two disks, which are designed to help second and third graders improve their reading comprehension. Although designed specifically with the New York State DRP Third Grade Examination in mind, this series is generally applicable to second and third grade reading preparation.

Each program presents paragraphs having missing words. Using the context of the paragraph, the student must choose one of several given words to fill in the blank(s). If the answer is incorrect, a clue is given from within the paragraph. The story titles include:

| | |
|---|---|
| BLIND! | ANIMALS OF LONG AGO |
| MAKING JELLY | BLOOD! |
| ALIGATOR | OLD TREE |
| LOST | PONY EXPRESS |
| FISH OR MAMMAL | HOLIDAY PARTY |
| AROUND THE WORLD | ELEPHANT'S TRUNK |
| FIRE | *And more!* |

Each program will load in 16K and is 2000/4000 and C-64 compatible.

Price: $99.95 two Diskettes

## SPELL IT
(Apple 48K Diskette only)

SPELL IT is a spelling quiz system which uses words that you select from 2,000 diskette entries. You can easily make up your own ten-word quizzes and save them on file. SPELL IT can be used at home, in the classroom, in libraries and in business to help children, students, and workers learn correct spelling in an entertaining way. People of all ages enjoy "playing" SPELL IT. They like being able to set their own pace and like the satisfaction which comes from successfully meeting a challenge.

A typical application might be the following. A quiz is selected from the diskette files. When the student is ready, the screen displays the list of words in the quiz. Each quiz word then briefly appears at the center of the screen. The student watches the word flash, and then types the word from memory. Misspelled words are repeated until the correct spelling is given. At the conclusion of the testing, the student's scores are shown and may be printed (if a printer is available). Up to 200 quizzes may be called.

SPELL IT is self-prompting and virtually "fool proof". It is accompanied by a 25-page manual which instructs how to use the program in very clear and easy to understand steps.

Price: $19.95 Diskette

## ELIZA II

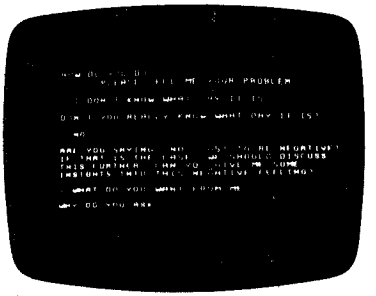
(Available for all computers except Apple, Commodore, North Star (BASIC) and Atari)

This is the well known artificial intelligence program which was originally written by Joseph Weizenbaum for the large computers at MIT. ELIZA simulates a session with a psychotherapist who analyzes your comments and responds accordingly. This program has gained particular recognition for its surprising ability to provide realistic responses to your statements, and has often been referred to in reference to Turing's test for human intelligence.

DYNACOMP's version of ELIZA is unique in that several new features have been added without compromising the quality of the original. For example, the range of the dialogue has been increased and the responses are less patterned. The entire exchange may be saved and recalled from disk. You can save and continue sessions later. You may add in your own code (the program is in BASIC) to extend ELIZA's abilities. And more! However, don't take ELIZA's responses too seriously. After all, it's only a computer (or is it?)!

Price: $19.95 Diskette
$22.45 Disk

Requires 48K.



## WORLD GEOGRAPHY

(Atari and TRS-80 only)

WORLD GEOGRAPHY is a graphical educational tool for teaching the locations, capitals and largest cities of states and provinces within the U.S. and Canada, as well as countries within North America, South America, Central America and Europe. For example, the outline of Europe and its countries may be displayed. The student must name the country with the flashing border. If the answer is correct, the student goes on to being questioned about the name of the capital and/or largest city. If he/she gets it wrong, there is another chance, after which the correct answer is shown. Options are available to review the correct answers, see the score and be tested on the questions gotten wrong. Use WORLD GEOGRAPHY to enhance your child's knowledge or to fill in that gap.

Price: $12.95 Cassette
$16.95 Diskette

The Atari version does not contain the states quiz (see STATES, CAPITOLS and NICKNAMES).

## FUN 'N' GAMES

(Atari Only)

FUN 'N' GAMES includes four educational programs: JUMBLE, GUESSIT, POSSIBLE, and LEAPFROG. JUMBLE is an interactive version of the popular word game. Each game within JUMBLE has four scrambled words, a hint, and a secret word. GUESSIT is a deductive reasoning word puzzle. POSSIBLE helps you reduce frustration by supplying all combinations of a given set of letters so that you can spot hidden words (use it in SCRABBLE™!). In LEAPFROG, little green frogs jump from lily pad to lily pad while you try to reverse their positions in a minimum number of turns.

Requires 24K, one disk drive, and one joystick.

Price: $12.95 Diskette

## CRYPTO

(Osborne and Kaypro only)

CRYPTO is a comprehensive crytography program which is both challenging and educational. There are two basic ways to play CRYPTO.

1. Automatic: The computer chooses from a file of over 350 quotations which one or two players must decipher.
2. Manual two player: Each player creates his or her own phrase, and CRYPTO creates a cryptogram for the other to decipher.

You may choose the level of difficulty so even the young can play (teaches deductive reasoning and reading skills), and guess by letter or word. You may also add to the list of phrases up to the capacity of the disk.

The key advantage CRYPTO has over board games is that the computer automatically takes care of the tedium involved in the letter replacement and scoring; you are free to THINK.

Price: $17.95 Diskette

## IMPORTANT NOTICE

Look at the address label on this catalog. If there is an asterisk (*) in front of your name, this may be your last free DYNACOMP catalog. If you wish to continue receiving the DYNACOMP catalog, please fill out and mail the form which appears on the inside of the back cover of this catalog.

## YOUR FIRST ATARI DISK

(Atari only)

YOUR FIRST ATARI DISK is a disk *full* of educational programs. Included are:

- An autocataloging program.
- An autobooting program.
- A sound-demonstration program and tutorial.
- A new and unique hangman program with five 100-word lists, letter shooting, and a maze.
- A graphics demonstration.
- Three programs for math, alphabet, and stick art.

The autocataloging and autobooting programs may be copied onto your own disks. You may customize your own disks by having the catalog autoboot, then select your program by catalog number.

The sound-demonstration program provides several very nice features. Not only do you hear sound effects, but the BASIC program statements are also shown. You may also experiment with four voice sounds and tunes.

The hangman game is not the simple variety you've seen elsewhere. This version contains five word lists (each containing 100 words) of increasing difficulty. You may also build your own word lists. Also, the game has been made a bit more intricate by adding joystick control, an energy maze, passwords, etc.

The remaining four programs are interesting on their own, but more importantly, form frameworks for more elaborate programs which *you* may write!

Requires 48K and one disk drive.

Price: $29.95 Diskette

## LATIN, FRENCH and SPANISH HANGMAN

(Availability: see below)

The HANGMAN series offers a new and educational twist on the classic Hangman game. It may be played one of four ways (we will take Spanish as an example):

1. Sentences — English to Spanish
2. Sentences — Spanish to English
3. Vocabulary — English to Spanish
4. Vocabulary — Spanish to English

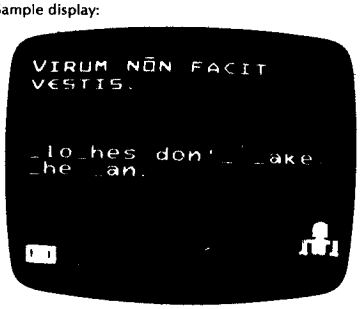
You are presented with the word or sentence in one language and you have to construct the translation. There are over 400 sentences and more than 1,500 words (depending on disk capacity) to work with. Level: approximately first-year language course.

This is a fun way to get started with a language. The Hangman series has received a rave review (see Review section) in *Softalk* magazine.

Availability: LATIN and FRENCH HANGMAN: Apple only
SPANISH HANGMAN: TRS-80 and Apple only

Price: $29.95 Diskette

Sample display:




See the REVIEWS section for additional information.

## MATT THE CAT PHONICS I

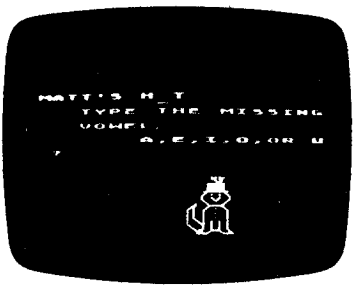
(Atari only)

This is a basic phonics learning program for grade levels 1 through 3. The student is presented with words having a missing vowel. The correct vowel must be chosen, as well as its length (long or short). The student's interest is enhanced and maintained by very nice graphical rewards.

Rquires 48K.

Price: $14.95 Diskette

Sample display:



## CHANCELLOR OF THE EXCHEQUER

(Atari Only)

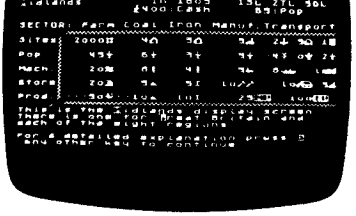
Test your skills as Great Britain's chief financial officer during the first 100 years of the Industrial Revolution. Eight regions are at your command. As Chancellor you have to decide how to feed the nation's population, develop the natural resources, boost manufacturing, build an integrated transportation system and stimulate trade.

CHANCELLOR OF THE EXCHECQUER is a *simulation* which is both fascinating and educational, and which has received great reviews (see review section).

Requires 48K, and one disk drive.

Price: $29.95 Diskette

Sample display:



See the review section for more information.

## CAPITAL ATTACK
(Commodore 64 only)

The purpose of this game is to teach students the names and correct spellings of the states and their capitals.

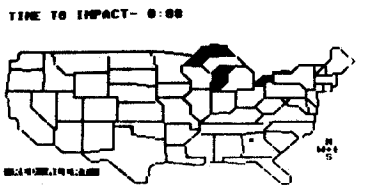
Earth is under attack by aliens from the planet Xenon. Wave after wave of interplanetary ballistic missiles are being launched at the United States. As commander of defenses, your job is to defend all of the 50 states and their capitals.

Powerful anti-ballistic missile bases are located right outside each of the capitals. When a missile is detected heading toward a state, you must type in the name of the capital of the state in orc'er to launch your ABMs and destroy the Xenon missile.

Don't delay! There is only a limited amount of time before the warhead hits. As you watch the clock tick down on the missile approach, you must quickly think of the answer that will launch the counter-attach and save the state.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:




## GAME SHOW USA PRESIDENTS
(Commodore 64 only)

GAME SHOW USA – PRESIDENTS is an educational question and answer game for one or two players. The categories covered for a given president are:

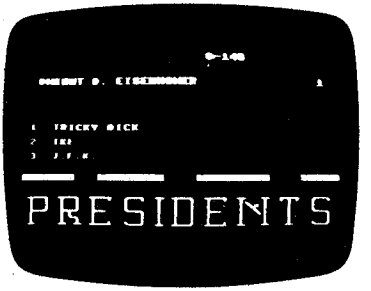
| | |
|---|---|
| Vice President | Sequence and Party |
| Years in Office | Date and Place of Birth |
| Nickname | Date of Death & Burial Place |

The answers are given in multiple-choice format with a time limit for responding. Points (dollars) are awarded for the correctness of response and speed. This program offers an enjoyable approach to the task of learning and remembering historical data. (Who was Hannibal Hamlin?).

Requires one joystick (for one player) or two joysticks (for two players).

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



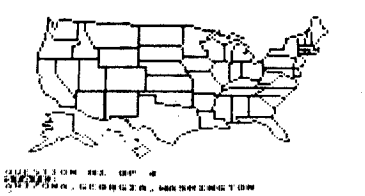

## GAME SHOW USA STATES BIBLIOGRAPHY
(Commodore 64 only)

GAME SHOW USA is an educational game for one or two players. The computer asks questions about the 50 states and points are awarded according to correctness and speed. The game is therefore educational and competitive (and fun to play!). Many of the questions are difficult, but after a while the student will learn and achieve higher scores.

Requires one joystick (for one player) or two joysticks (if two play).

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

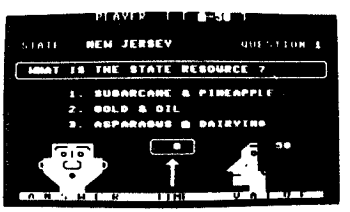


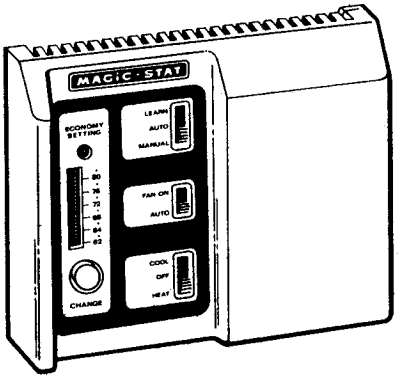
## STATES, CAPITALS, AND NICKNAMES
(Atari only)

STATES, CAPITALS, AND NICKNAMES reviews these three items for each of the fifty states. The student can choose either a written or map-aided format, the type of questions to be asked, and the number of questions. There is also a multiple-choice option. When done, the student is graded and may review any missed questions. The program is very friendly and is both fun and educational for all ages. STATES, CAPITALS, AND NICKNAMES uses Atari graphics and requires 24K for cassette or 32K for diskette.

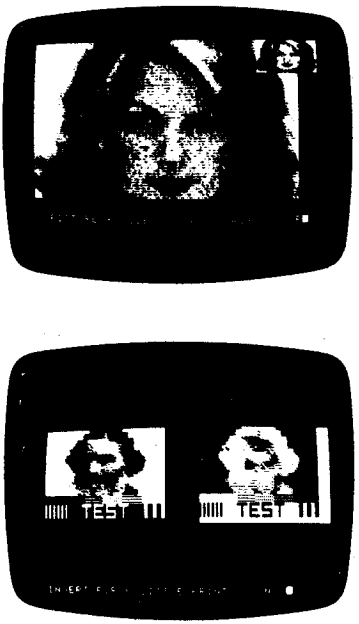
Price: $12.95 Cassette
$16.95 Diskette

Sample display:






**SEE THE SUPPLIES SECTION**




## SPELL MASTER

(CP/M and IBM only)

SPELL MASTER is simply the most extensive spelling-education and word-utility software package available. First, SPELL MASTER contains a spelling vocabulary of over 40,000 words. This spelling list contains words ranging in difficulty from the very simple to the very difficult. Second, SPELL MASTER can be operated in several modes:

Games:
- Standard Hangman
- Unscramble
- Guess the missing letter(s)

Utilities:
- Crossword helper
- Scrabble helper
- Spelling checker

Experimental:
- Create your own use for SPELL MASTER's vocabulary.

The games offer various difficulty levels based on word length, amount of scrambling, and the number of missing letters.

The crossword utility allows you to specify those letters of the word that you know, and the computer will search for matches.

The Scrabble helper will take the letters you specify and display the possible words which can be made from those letters. You can even make the search conditional (e.g., there must be an E in the third position and an N in the fifth position).

The spelling checker can work on most text files created by the popular word processors. It is not an elaborate (or fast) checker, but does a good job at catching those typos you never seem to be able to see.

The programs comprising SPELL MASTER are written in BASIC. They are supplied in two versions: expanded and REMarked source listings, and compacted code (for speed). This allows you to make changes if desired. In addition, a utility is provided for adding words to the vocabulary to suit your needs. This vocabulary is not protected and consists of simple ASCII sequential files which you can easily access.

SPELL MASTER comes on several disks. One disk contains the BASIC programs. The other disk (two or three, depending on your machine) contains the vocabulary files. Although it is best if you have two drives, one drive can be used (you are automatically prompted to switch disks).

SPELL MASTER is fast in the game mode, but moderately slow (depending on the complexity of the search) in the word-comparison mode. (We have done some "smart" things to optimize the search and comparison procedures. Some of our methods might even be called clever!) However, when in the search mode, SPELL MASTER can be left unattended to do its job.

Requires 48K and one disk drive. A printer is supported, but is not necessary.

Price: $39.95 single/double density
5¼-inch Diskettes
$44.95 two 8-inch CP/M Disks

## COMMODORE 64 TUTORIALS

(Commodore 64 only)

The two-volume COMMODORE TUTORIAL set teaches the fundamentals of the Commodore 64. It explains the topics in an easy-to-understand manner using audio-visual aids. To assist comprehension, reviews and short quizzes are included.

Volume I contains an introduction to the Commodore keyboard and Commodore BASIC. It is designed for the first-time user.

Volume II is more advanced. It explores the process of sound synthesis and the features of the Commodore 64 that are built in for this purpose. To enhance understanding of the subject, a special controller is included which enables the user to experiment with various sounds.

Volume II also explains the nature and function of sprite and character graphics. Different graphics techniques are discussed in simple and clear terms. A sprite editor is provided to assist the user in creating sprites.

Available only on diskette.

Price: Volume I $24.95 (Diskette)
Volume II $24.95 (Diskette)

## FEELING BETTER

(Apple II only)

FEELING BETTER is an education program designed to help children reduce their feelings of anger, upset, depression, anxiety, and guilt. It begins with a presentation about the nature of feelings and emotions, so that the child will be able to label and identify them when they occur. It then presents a simple but powerful A > B > C method for the analysis of emotionally disturbing events, and shows the child how to feel less upset in response to those events. Interest is maintained by animations, noises, bells, etc.

The FEELING BETTER package contains one diskette, a manual, a package of FEELING BETTER Self Analysis Forms, and a package of emotional knowledge tests for pre- and post- testing.

Price: $39.95 Diskette

## CP/M TEACHING, TESTING AND TRAINING PROGRAM

(Kaypro only)

The most important first step in acquiring computer literacy is to learn how to use your computer's operating system. For CP/M-based machines, this is no mean feat!

The CP/M 3T package was designed to be a school in itself, simulating the classroom environment. There are text lessons, multiple-choice questions, and coaching. Test scores are used to direct the student backwards or forwards in the lessons.

Many prominent computer trade journals have evaluated CP/M 3T and found it to be one of the most successful simulations of a school format.

CP/M 3T was designed and programmed by Software Academy and is used in its computer school. If you are a beginner to CP/M, become our student!

Price: $99.95

## CAT (COMPUTER-AIDED-TEACHING)

(TRS-80 only)

The CAT (Computer-Aided Teaching) package consists of two programs, CATGEN and CAT. CATGEN is used by the teacher to create lesson, test and lesson plan files. CAT is used by the student to run the lessons and tests created by the teacher.

A lesson created by CATGEN consists of a screen of mixed text and graphics, with an optional practice question mode. In creating the lesson the keyboard directional controls are used to place the cursor and write mixed text and graphics.

The teacher may also enter up to 50 multiple choice questions, with 5 possible answer selections for each question. Automatic correction and scoring is provided by CAT during the administration of the test.

The lesson plan file creation procedure provides the teacher with a method of automatically administering a specific sequence of lessons and tests to the student. The lesson plan consists of a chain of lesson file and test file names, which will automatically be run by CAT when the lesson plan is entered.

Editing options are provided. Most commands are menu-selected, and the operator is prompted for most entries.

The CAT portion of the package provides the operational environment for student use of the files created by CATGEN. The student is prompted to enter his/her name, the date, and the name of the assignment. CAT automatically types the selected assignment and proceeds to present the lesson or test to the student. CAT provides correction and scoring for practice questions and tests, and presents the results and correct answers to the student. The results may be optionally sent to the printer. Error checking and trapping is provided to prevent crashing the program through nonsense input.

If a lesson plan is loaded, CAT will automatically load and run the lessons and tests contained in the plan. Otherwise, the student must enter an assignment name for each lesson and test.

COMPUTER AIDED TEACHING is flexible enough to be used for every subject and grade level. It can even be used in business and industry for training. Includes a detailed manual. Requires 48K. Printer optional.

Price: $39.95 Diskette

## APPLESOFT TUTORIAL

(Apple 48K Only)

As with DYNACOMP's ATARI UTILITIES and DIVERSI-DOS diskettes, here is another package which DYNACOMP is distributing as a public service. Quite frankly, DYNACOMP believes that the more you know about programming the more you will appreciate DYNACOMP's products and the more at ease you will be with your computer.

APPLESOFT TUTORIAL is an educational disk (which is nearly full!) of menu-driven lessons on how to use Applesoft BASIC. It is designed with the beginning computerist in mind, and is an excellent way for a novice to get started. Just put the diskette in the drive, turn on your computer, and start learning how to program.

Price: $9.95 Diskette

Cannot be used towards quantity (3 or more, 5 or more) discounts.

## MICROTEACH COURSEWARE PACKAGE

(Atari only)

MICROTEACH is a courseware development package designed to help the teacher prepare and administer computerized mini-courses. To use this package you (and the student) *do not* need to know how to program; rather, you follow simple instructions.

The MICROTEACH system comes in three separate modules which are on three disks.

TEACHER'S AIDE DEVELOPMENT MODULE

This module helps the teacher build a courseware disk containing the desired lessons. You are supplied simple graphics facilities and screen-editing functions to facilitate lesson construction. In other words, you may build and edit screens which have both graphics and text.

Each screen is numbered and the presentation (to the student) is programmed. For example, there are several types of questions available and, depending on the student's response, the lesson is directed from the 'test' screen to an 'answer' screen. This is ideal for programmed learning or review exercises.

These question formats are available:

Multiple choice
True/False
Yes/No
Fill-in-the-blank
Matching
Programmed instruction

Page presentation time may be controlled, student progress may be reviewed, etc. This module makes it very easy to create a very substantial lesson.

STUDENT PAK MODULE

This module is used to run a courseware disk created by the development module. It interprets the information on the courseware disk and presents it as determined by the teacher.

COURSEWARE MODULE

This is the lesson module created by the teacher. It is run using the STUDENT PAK. Note that a minimum configuration is one DEVELOPMENT module and one STUDENT PAK module and these modules are sold separately. Teachers usually purchase just one DEVELOPMENT module and a half-dozen or more STUDENT PAKs, depending on their needs.

DEVELOPMENT MODULE
Price: $39.95 Diskette

STUDENT PAK
Price: $19.95 Diskette

ACCOUNTING COURSEWARE
Price: $19.95 Diskette

NOTE: The MICROTEACH package was originally published and advertised by COMPUMAX. DYNACOMP has acquired the publishing rights and is offering these modules at a substantially reduced price.

## EARN-IT/PLAY-IT

(Apple only)

EARN-IT/PLAY-IT is an automated "contingency management" program for classroom use; access to computer games is contingent upon the student's behavior.

Each use of EARN-IT/PLAY-IT with a student is called a session. Generally a session is one school day. The teacher may identify up to nine objectives for each student during a session (e.g., completes homework, passes quiz, zero rate of misbehavior). At the end of a session, the teacher records whether or not the student has achieved each objective. If a specified proportion (say 65%) of the objectives is achieved, the student is rewarded with game credits. Game credits give the student an opportunity to play one of the games contained on the EARN-IT/PLAY-IT disk. The student may choose to save the game credit or use it immediately (if the teacher permits). EARN-IT/PLAY-IT will keep track of each student's game-credit balance. To maintain the student's motivational level, new games become available at certain milestones. There are six different games on the DYNACOMP disk. At game time, the student can select any available game for which he/she qualifies. Naturally, the more interesting games cost more game credits.

Requires 48K and one disk drive.

Price: $29.95 Diskette

## ENDORSEMENT:

HODGE PODGE has recently been "strongly endorsed" in the book "Teach: Achieving Equity and Excellence in Schools," by Joe Nathan (Pilgrim Press).

## MASTER DRILL

(TRS-80, Apple, CP/M and IBM only)

MASTER DRILL is a utility specifically designed for the educational environment. With MASTER DRILL you can quickly and easily set up multiple choice drills on any subject you desire. All you do as the drill creator is respond to the prompts. The program will ask you for the question and its corresponding answer. Later, when that question is presented to the student, between two and nine (your choice) multiple choice answers will be presented, one of which is correct. The incorrect answers are drawn at random from the answers to the other questions. For those who have written multiple choice tests, you know how much time this feature can save.

In addition, if your questions have a common beginning phrase (e.g., "WHAT IS THE CAPITAL OF"), you may pre-set this so that you need only type the remainder of the question when prompted. In this way files can be quickly built (and added to), and very nice drills created. Included on the disk is a sample drill called CAPITALS.

Price: $18.95 Diskette

Sample display:

## DISKOVERY™ EDUCATIONAL SOFTWARE

DYNACOMP is pleased to announce that it now distributes the DISKOVERY™ line of educational software. These products are both well designed (by experienced educators) and well executed, fully utilizing your compute's color, sound, and graphics. For example, read the following review excerpts from *Creative Computing*, July, 1984:

THE WORD BIRD *is a unique program that drills several valuable skills at once. It teaches spatial relationships while encouraging the young reader to read carefully. ... The graphics are colorful and clever, and the vocabulary is varied enough to assure that children will not soon tire of it.* ... THE WORD BIRD *is a truly superb example of what educational software can be. We recommend it highly.*

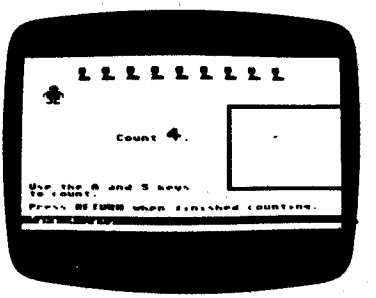
That should give you an idea of the quality of this series. The Apple and Atari versions require 48K of RAM.

### TAKE AWAY ZOO
(Commodore 64 and Apple only)

TAKE AWAY ZOO lets children learn how to subtract in a fun, game format. They learn counting, set separation, subtraction facts, and number awareness. There is math practice and a report card (with print-out option). For ages 3 to 8.

Price: $29.95 Diskette

Sample display (Commodore):




### MATCH UP
(Commodore 64 and Atari only)

MATCH-UP is composed of 4 arcade-style games which prepare children for reading and writing. The child will learn: letter, symbol, and number matching and recognition; punctuation; the alphabet; eye-hand coordination; and beginning reading. For ages 3 to 8.

Price: $29.95 Diskette

### ADDING MACHINE
(Commodore 64 and Apple only)

ADDING MACHINE teaches children addition facts using an interactive game format, fun graphics, and animated action. The child learns adding facts, number comparisons, and set combinations. There is also a report card (with a print-out option). For ages 3 to 8.

Price: $29.95 Diskette

### THE WORD BIRD
(Commodore 64 only)

THE WORD BIRD helps children understand spatial relationships between objects in space and the words which tell about them by using bright, funny, and exciting graphics. The child learns vocabulary, word order, sentence meaning, spatial words, and basic reading skills. For ages 6 to 12.

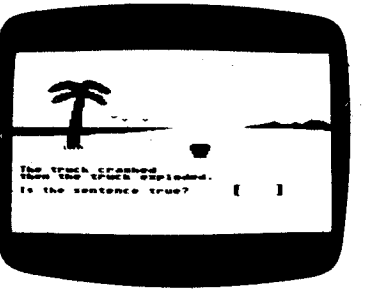
Price: $29.95 Diskette

### TIME ZONE
(Commodore 64 only)

TIME ZONE improves the child's abilities to see relationships between objects in space and events in time. The child learns vocabulary, word order, time words, sentence meaning, and reading. For ages 6 to 12.

Price: $29.95 Diskette

Sample display (Commodore):




### ALPHABET FACTORY
(Commodore 64 and Atari only)

Your child "works" with Robbie the Robot in the Alphabet Factory packing and shipping upper and lower case letters. In the process he or she learns upper and lower case, letter matching, symbol recognition, and early reading. For ages 3 to 8.

Price: $29.95 Diskette

### COLLECTIONS

The complete six-diskette set of DISKOVERY™ programs (for Commodore only) may be purchased for $139.95. Alternatively, you may use our 10%–20% discount (see order form). However, if you use the collection discount, you may not apply this purchase toward *further* quantity discounts.

### HINT
(North Star BASIC)

NO PROGRAM or OUT OF MEMORY error: Either the program file is empty (unlikely) or you did not use MEMSET to allocate enough memory for the program.

## STAR CAL II
(IBM only)

Keep informed of coming celestial events using the mothly sky calendar provided by STAR CAL II. Choose any month during 1984 to 1990 inclusive and an organized table of important astronomical phenomena is immediately displayed on the video screen. Events covered include:

- phases of the moon
- lunar and solar eclipses with terrestrial locations for viewing
- Oppositions of Mars, Jupiter, and Saturn
- east and west greatest elongations of Venus
- annual meteor showers (with expected hourly rate)
- culmination of 85 constellations (point at which they reach highest point above horizon)
- miscellaneous events (such as oppositions of Vesta, the largest asteroid)

For weekend astronomers, all dates include the day of the week. The calendar's layout shows at a glance if the moon will be favorable for night viewing.

STAR CAL II also provides a real-time astronomical clock, keeping time in the following 6 standards:

- local standard
- local daylight
- local civil
- local mean siderial
- universal (GMT)
- Greenwich mean siderial (GMST)

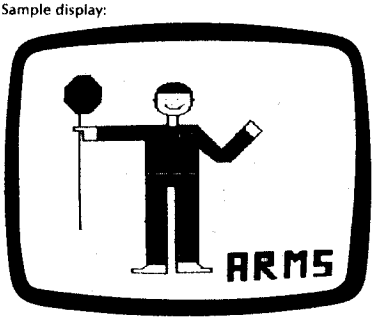
All 6 are continually displayed and updated on the screen bottom. Select any one with a single keystroke to be vividly depicted in bold 2" numerals in the screen center. Assuming good accuracy in your longitude value and IBM-PC system time, all 6 standards are accurate to within 5 seconds of their true values.

Price: $29.95 Diskette

## BODY BASICS
(Atari only)

BODY BASICS is so simple to use that your child can have fun while learning independently! Pictures of people and animals with brightly colored body parts appear on the screen with sound and music. One body part is clearly identified in each picture. The printed name and the body part are in the same color. Through this method of association it is easy for your child to learn the names, locations, sizes, and shapes as well as actions and uses of the body parts. BODY BASICS also develops eye-hand coordination, awareness of music through children's tunes, and reading fundamentals.

Requires 48K, disk drive, and one joystick.
Price: $18.95 Diskette
Sample display:




## ELECTRONIC PROBLEM SOLVER
(Atari only)

ELECTRONIC PROBLEM SOLVER is a comprehensive package designed to enable you to solve over 100 electronic measurement and design problems even if you have little knowledge of electronics. You do not even have to understand algebra! Additionally, you may extend the functions, range, and accuracy of your test instruments.

Here is a list of menu selections:

| | |
|---|---|
| Unit Conversions | Ohm's Law – DC |
| Resistance of wire gauges | Resistor color code |
| 5% and 10% resistors | Combining components |
| Frequency – duty cycle | Voltage – duty cycle |
| Reactance of capacitors | Reactance of inductors |
| Impedance | Sine wave voltage |
| Ohm's Law – AC | Oscilloscope frequency |
| Oscilloscope voltage | Instrument compensation |
| Decibels – multiplier | Voltage divider |

Choices and values may be entered either from the keyboard or using a joystick. Includes a very carefully prepared 72-page manual designed so that even a beginner can use ELECTRONIC PROBLEM SOLVER.

Suggested audience: Student, hobbyist, experimenter, or technician.
Requirements: 40K RAM, disk drive, joystick (optional), and printer (optional).

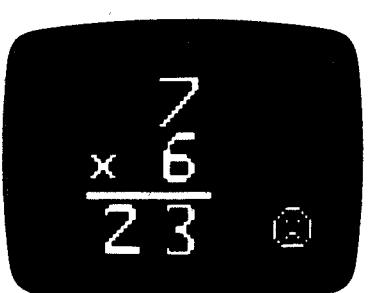
Price: $39.95 Diskette

## MATH WHIZ QUIZ
(Atari only)

MATH WHIZ QUIZ is a series of lessons in math for preschool through grade school children. Sounds and graphics are used in counting and elementary addition and subtraction exercises. The user can easily choose the difficulty of the lessons which progress through 12 levels up to multiplication and division. Correct and incorrect answers are clearly indicated with graphics displays. Problems are repeated until the student either supplies the correct answer or requests the Atari to provide the answer.

Requires 16K (Cassette), 24K (Diskette).

Price: $13.95 Cassette
$17.95 Diskette
Sample display:



## THE SCIENCE PROFESSOR COLLECTION

(Pet/Commodore only)

THE SCIENCE PROFESSOR is a collection of ten separate programs on the following subjects:

1. INSECTS – Shows how insects grow and change and in what ways they are alike.

2. MACHINES – Familiarizes the student with the different types of simple machines and how they are useful.

3. BONES & MUSCLES – Shows the major bones in the body and the different types of muscles. Also acquaints the student with bone marrow, cartilage and ligaments.

4. MATTER – Shows the difference between the three forms of matter and discusses heat, energy, gravity, and recycling.

5. EARTH'S ATMOSPHERE – Teaches about the composition of our atmosphere, air pressure, differences in temperatures over land and water, and about acid rain.

6. SOLAR SYSTEM – Teaches about the nine planets, seasons, orbits, and much more.

7. PLANET HOPPING – Teaches the student a little bit about each planet and the other bodies found in our solar system.

8. EARTH'S ROCKS – Shows the three types of rocks, how they are formed, and the differences between them.

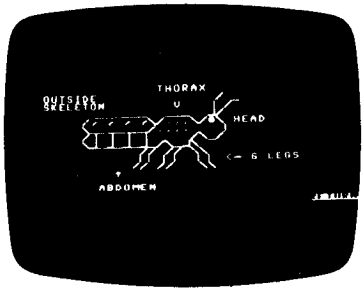
9. GREEN PLANTS – Shows the food-making process in green plants and its importance to the world.

10. EARTH'S RESOURCES – Teaches about renewable resources, fuel from green plants, and conservation.

THE SCIENCE PROFESSOR is intended for children with at least a fourth-grade reading level, and is applicable through grade 9. Each program concludes with the ARROW GAME (like SPACE INVADERS™) which tests how well the student has learned the lesson. Also provided is a study sheet (which can be printed) showing the questions answered incorrectly.

Each program requires 16K of memory. A printer is supported but is optional. Compatible with 2000/4000 and C-64 computers.

Price: $99.95 Diskette




## THE PEP PREP SERIES

(Pet/Commodore only)

THE PEP PREP SERIES is a collection of 16 programs for elementary education. It was originally designed to help students prepare for the third grade New York State PEP Test, but has been found to be generally useful in both elementary and remedial education. The 16 programs and their objectives are:

1. FRACTIONS – From a geometric shape, the student will be able to tell what fractional part of the whole has been shaded in by typing in the numerator and the denominator that correspond to that figure.

2. GRID LOCATION – The student will be able to determie the X and Y coordinates of a randomly placed point on a grid.

3. ODD & EVEN – The student will be able to determine whether a number is odd or even.

4. BAR GRAPHS – From a vertical bar graph, the student will be able to determine those values which are negative.

5. SKIP COUNTING – Given a pattern of numbers, the student will be able to tell what number has been added to each of the previous numbers and, by doing so, determine the next in the series.

6. INEQUALITIES – The student will be able to complete an inequality by correctly typing in the greatest or smallest value (depending upon what is asked for).

7. SUBTRACTION WITH RENAMING – The student will be able to subtract a 3-digit number from another 3-digit number by renaming one group of ten as 10 ones.

8. FACTORS – From four choices, the student will be able to find the number that is *not* a factor of a given product.

9. ORDINAL NUMBERS – A) The student will be able to name the ordinal position of an object in a line of 10 characters, both in numerical and written form. B) The student will be able to name the ordinal position that follows a given ordinal number greater than 11th and less than 100th.

10. PLACE VALUE & EXPANDED NOTATION – The student will be able to identify the ones, tens, hundreds, and thousands places in a four-digit number.

11. SYMMETRY – The student will be able to determine which geometric shapes show lines of symmetry and which shapes are symmetric.

12. TABLES – The student will be able to count tally marks from a table.

13. ROUNDING – The student will be able to round off a 2-digit number to the nearest ten.

14. PROBABILITY – The student will be able to choose the probability of an event happening in 2 forms: 3/4 and 3 chances in 4.

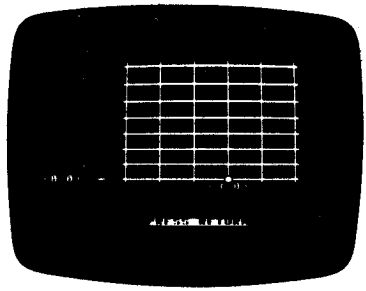
15. PERIMETER – The student will be able to calculate the perimeter of a given shape.

16. THE METRIC SYSTEM – Given a paragraph, the student will be able to determine which Metric unit should be used.

Each program begins with a tutorial and is followed by a graded test. Besides teaching elementary math skills, PEP PREP is useful as an introduction to the use of computers and computer keyboards.

Each of the programs requires 16K and is Commodore 2000/4000 and C-64 compatible.

Price: $99.95 Diskette



## EDUCATION – SCIENCE and MATH

### THE FOOD COMPUTER
(TRS-80 only)

THE FOOD COMPUTER is an educational tool for analyzing and improving your nutritional intake. Using your age, sex and what you eat (e.g., two servings of ice cream, one serving of potato salad and one shot of rum), THE FOOD COMPUTER calculates the total nutritional content and percentage of Recommended Daily Allowance (%RDA). The program is easy to use and *very* informative. Great for dieters and parents concerned with the nutrition of their children. Let your teenager run THE FOOD COMPUTER to see the value of what he/she is eating. They may not listen to you, but maybe they will believe THE FOOD COMPUTER.

A printer is supported, but not necessary. Requires 32K for cassette or 48K for diskette.

Price: $15.95 Cassette
$19.95 Diskette

### BOTANY FRUIT KEY
(Atari diskette only)

BOTANY FRUIT KEY is an exciting and new approach to identifing common fruits on the Atari computer. You answer the easy to follow questions about the fruit you have just picked off the back yard tree. This program identifies apples, pears, crabapples, maples, elms and many many more ... 125 trees and shrubs in all. You learn how a botanist identifies plants by their anatomy. You learn the common name and the name scientists call them by. And if you get stuck, there's an easy to use glossary. The glossary contains dozens of technical terms, making them fun to learn.

Imagine the world of discovery opened to you when you use this clever computer assisted learning tool. Certainly no classroom should be without it!!! Requires 24K.

Price: $19.95 Diskette

### MATH INVADERS™
(Apple only)

Using MATH INVADERS™, children can learn elementary math facts with better retention than by following textbooks. Among the features provided are:

- Speed factor setting
- Controlled reinforcement
- Developmental sequence drills
- Drill file maker
- Management reporting (record keeping)
- Game result structure
- 32 drills

MATH INVADERS was developed by an educator with the goal of making math drill enjoyable and more effective. It has been field tested for two years, modified, and now is available for distribution through DYNACOMP.

Here are some of the endorsements:

*"Our students, mostly third and fourth graders, have been using MATH INVADERS and enjoy it very much. It is beginning to have a 'snowball effect,' which makes us extremely pleased."*

*Jim Miller, Principal*
*El Paso, TX*

*"Great for learning basic facts ... makes a great game for learning experience."*

*Mary Ann Herndon*
*Houston, TX*

*"MATH INVADERS is the key software package we used in establishing our elementary level computer labs. It has proven to be reliable, friendly, and effective."*

*Cindy Jankowski*
*Greece, NY*

MATH INVADERS includes a teacher's manual and laminated instruction sheet.

Price: $44.95 Diskette

### TEACHER'S AIDE
(Available for all computers except North Star)

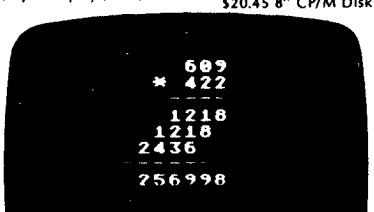
TEACHERS AIDE is a learning tool meant to be used for grades 1-6 mathematics. There are drills on addition, subtraction, multiplication and division. The child has the choice of five levels of difficulty for each procedure, and there is the option to drill and display each step in long division and multiplication. This is a valuable way to demonstrate the steps involved in division and multiplication and provides the student with insight into the processes involved in these operations. The problems are displayed in large block graphics for easy readability.

Does not run on Commodore 64.

Requires 24K.

Price: $13.95 Cassette
$17.95 Diskette
$20.45 8" CP/M Disk

Sample display (Atari):



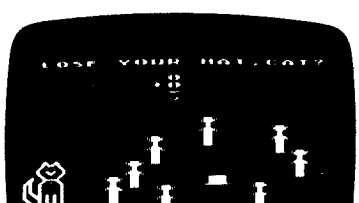

### MATT THE CAT MATH I
(Atari only)

This is a basic math learning program for grade levels 2 and 3. The student is presented with problems in addition and subtraction involving one and two digits (no carrying or borrowing). The rewards and penalties are graphical and serve to increase and maintain the student's participation in the learning process.

Requires 48K.

Price: $14.95 Diskette

Sample display:



## ADVANCED MATH GRAPHICS
(Apple only)

ADVANCED MATH GRAPHICS (AMG) is a menu-driven collection of seven programs which graphically (HI-RES) demonstrate many of the functions and concepts encountered in advanced high-school and beginning college mathematics.

The subject areas covered are:
- Polynomial functions
- Rational polynomials
- Trigonometric functions
- Polar plotting
- Conic sections (2D)
- Conic sections (3D)
- Fourier series

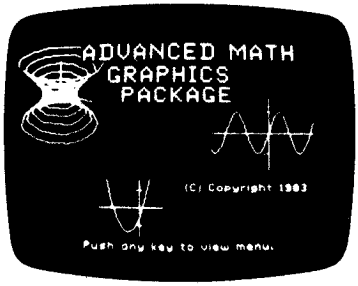
For each of the seven choices there is a variety of functions which can be plotted, and you can choose the coefficients which go with each functional form. Also, you may vary the screen parameters: size of each axis; tic distance; X, Y increments; multiple functions (on top of one another); etc.

The three-dimensional conic section plots are particularly interesting to view, and the Fourier series approximations to square waves (and other functions) are very informative.

Every step in AMG is menu-controlled and error trapped. Each graph can be saved on disk for later recall. Includes an ***excellent*** 32-page instruction manual.

Price: $39.95 Diskette

Sample display:




## OHM'S LAW
(Atari only)

If you are learning electronics, then OHM'S LAW will solve your problems dealing with resistance, current, voltage and power. Of course, if you just sit back and let OHM'S LAW do all the work for you, you will not learn a thing! But it will certainly check your answers for you to guarantee they are correct. It will also solve those problems you claim cannot be solved "because there is not enough information", unless, of course, you are right and there really is not enough information. It will point out to you that the problem can be solved and you are just not trying hard enough.

OHM'S LAW will give you a better insight into what you are trying to learn. It may be used to point out subtleties overlooked in the learning process. The program's ability to perform so many calculations in a very short period of time will allow you to perform many experiments to see more clearly the relationships often overlooked because of the time it takes to make all those time-consuming calculations.

The program can also be used to solve Thevenins's and Norton's theorem problems as well as "T" circuit, bridged "T" circuit and lattice network problems and can aid you when your're designing actual electronic circuits.

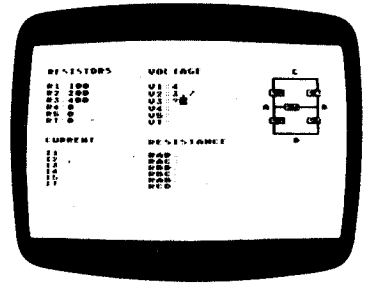
OHM'S LAW will not perform magic, nor will it do anything that you yourself cannot do. (Well, maybe it can, but it wasn't planned that way.) But it will do the calculations much, much faster than you can!

It is not necessary to enter any formulas when you use OHM'S LAW. All formulas and special-case relationships are built into the program. There are over 400 of them!

Requires 48K to run. A printer is supported but is not necessary.

Price: $19.95 Diskette

Sample display:



## PROBABILITY THROUGH PROBLEM SOLVING
(Apple and Atari, diskette only)

This educational package on two diskettes treats probability concepts at a level suitable for grades 7 - 12. Students select from the following menu of subprograms:

1. Introduction
2. Marbles in a Bag
3. Spinner
4. Parachutist
5. Dice
6. Coins
7. Playing Cards
8. Number Cards
9. Marble Bag-Complex
10. A Game
11. Looking Back
12. Self Test

PTPS makes strong use of an area approach to solving probability problems, giving students a concrete feeling for the concepts involved. The Self Test gives a percentage score, tells the problems missed, the program sections these problems came from, and gives the student an opportunity to return for more work on any program section.

PTPS has been tested extensively with students and found to be easy to use, educationally entertaining and challenging. As you can see (two disks), PTPS is an extensive software package.

Requires disk drive and 32K RAM. Comes on 2 disks.

Price: $39.95 Diskette

## MOUNT ST. HELENS and SOLAR SYSTEM

(Atari only)

Here is a combination educational package for ages 8 and up.

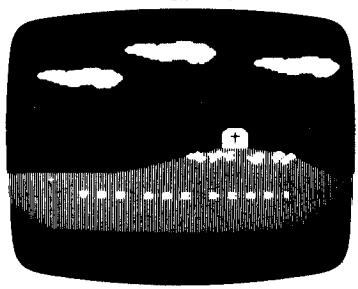
MOUNT ST. HELENS is a simulation of the 1980 eruption. The program presents this problem: How do you escape from an exploding volcano? At each point in your escape you are given a series of choices in action. Depending upon your choice, you may or may not survive to your next decision. The problems encountered in the process stress the use of *common sense* and the understanding of *consequences*, and are thought provoking. Includes graphic screens.

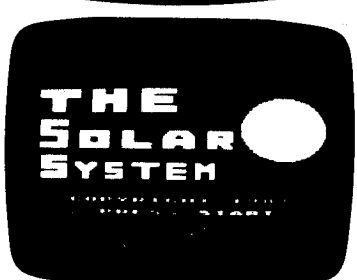
SOLAR SYSTEM is a graphics-oriented program which gives information about the planets in the solar system. Attention is captured by showing each planet graphically (including animation), with a list of basic information below the display. Included is a quick-quiz section.

Requires 48K.

Price: $17.95 Diskette

Sample displays:






## FROG MASTER

(Atari only)

FROG MASTER contains exciting arcade features in addition to being a highly educational program. It is a fast-moving, high-concentration game for 1 to 4 players. You score by making touchdowns on the opponents' goal line — if his goalie doesn't get there first. But your players (tadpoles and frogs) must be trained. This is accomplished by giving them a reward at just the right moment when they do something right. This takes precise timing and judgement. Your critters must penetrate barriers and avoid evil line backs if they are to score. Many will fall by the wayside, but some will get through. As they learn you can look inside their heads to see how they think. As you reward them, they reward you (the "thought processes" simulated demonstrate the basic type of animal learning — operant conditioning — widely studied in high school and college courses).

Runs in 16K. Price: $17.95 Cassette
Requires two joysticks. $21.95 Diskette

### ENDORSEMENTS!

- FROGMASTER won the $2,000 Atari APX award.
- FROGMASTER is now a MAIN LINE cartridge produced by COMMODORE for the C-64.
- "FROGMASTER is a computer game par excellence" says Courseware Report Card, Compton, CA.

## GEOMETRY REVIEW

(Apple and Atari Only)

GEOMETRY REVIEW is intended for use by high school geometry students throughout a traditional course. Using over 100 questions, the program tests ability to define, explain, compute, and identify on the basis of familiarity with definitions, theorems, and postulates. Each of its 7 chapters uses a different type of questioning technique and/or graphic display. The questions within each chapter avoid overlap with any other chapter. In this way the program is usable in the beginning of the course after the first few lessons of any standard textbook have been covered.

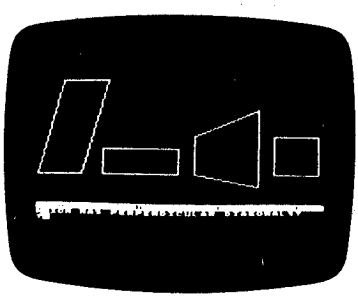
The subjects covered are:

1. Points, Lines and Plans
2. Angles, Perpendiculars and Parallels
3. Congruence
4. Quadrilaterals
5. Similarity
6. Right Triangles
7. Circles

Features include sound, graphics, and scoring. Requires 48K and one disk drive.

Price: $19.95 Diskette

Sample display:



## RUBIK'S CUBE SOLVER
(TRS-80 and PET only)

Solving the Rubik's cube puzzle is an exercise in algorithmic logic, and is a "natural" for computer calculation. The RUBIK'S CUBE SOLVER permits you to input the starting state of the 24 facing elements of the cube. It then solves the problem one step at a time, with each step shown as a unfolded view of the cube. Can you solve the cube in fewer steps. In any case, it sure beats disassembling the cube or peeling off and replacing the colors!

Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette
$21.45 Disk

## SERENDIPITY
(Apple diskette only)

This is the third in DYNACOMP's series of educational packages for young children (the first two are HODGE PODGE and CHILDREN'S CARROUSEL). SERENDIPITY was written by a teacher and field tested in an elementary school. It consists of the following nine subprograms:

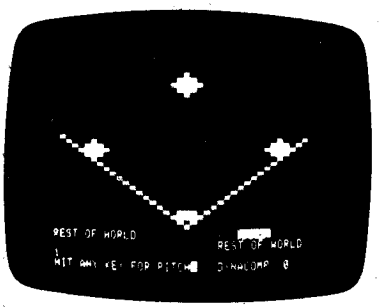
1. Alphabet Match Patch
2. Number Match Patch
3. Number Counting Patch
4. Waffle
5. Sour Apple
6. Math Invaders
7. Pinpoint
8. Estimation Baseball
9. Mineshaft

Each sub-program is called from a menu. All programs are friendly, have built-in instructions, and are virtually crash-proof.

SERENDIPITY was written with children in mind. After minimal experience, the child usually becomes comfortable with the format of this package. Each program follows a consistent system of entering and exiting. Most of all, the package is fun. The programs tackle difficult concepts in a great variety of ways. Requires 48K.

Price: $19.95 Diskette

Sample display:




See the review section for more information.

## PC CHORD PRIMER™
(IBM only)

The PC CHORD PRIMER™ is a package of software programs for the IBM Personal Computer that are designed to provide interactive assistance to the serious guitarist. The program capabilities range from a built-in library of over 600 chords to a set of automated lessons on music theory for guitar.

The program is divided into two major components. One consists of educational programs that include lessons on general chord structure and chord progression patterns. The other serves as a computerized reference manual or handbook. It provides a chord encyclopedia that automatically searches for chords by name or musical key, programs to assist music composition and transposition, and a guitar tuner.

This computer-assisted guitar tutorial has several advantages over standard reference books.

1. Many of the programs provide audio support through the PC's music synthesizer. This allows the user to hear as well as see the relationships between notes and chords.

2. The program automatically searches its chord data base to find chord positions. This reduces the time normally spent flipping through reference manuals.

3. By letting the computer perform chord transpositions the user can avoid referring to complicated chord tables and transposition formulae.

4. The program utilizes printer support so that hard copy reference material can be generated instantly if needed.

5. Screen graphics are fully used.

Requires an IBM with DOS 1.1, 64K memory, the IBM graphics board, color or monochrome monitor, and one disk drive. A printer is supported but not necessary.

Price: $49.95 Diskette

## PLAYER PIANO
(32K Atari cassette and diskette only)

Now you can turn your Atari into a player piano. In the creation mode the Atari keyboard is turned into a 20 key piano scale. You may generate tunes having as many as 400 notes composed of whole, half, quarter or eighths, and having a variety of tempos. The tune may then be saved for later editing and/or replay. You may play any segment of the tune, and display the notes on the screen for analysis and modification. PLAYER PIANO comes with sample tunes and a 15 page manual. PLAYER PIANO is an excellent program available at a very low price.

Price: $15.95 Cassette
$19.95 Diskette

NOTE: PLAYER PIANO is also distributed through ATARI's APX, but at a much higher price.

## TYPING 1

(Atari and Commodore 64 only)

TYPING 1 is a graphics and sound-oriented teaching program which consists of four basic parts. The first part teaches the locations of the alphabet keys and "home". The second part concentrates on home-letter and home-row combinations. Next there is "Reach for It", practice with letters above and below the home row. Last, there is "Monkey Type", a skill testing game which has graphic and sound rewards.

Recommended for ages 5 and up. Requires 32K.

Price: $25.95 Cassette
$29.95 Diskette

Sample display:

PLACE YOUR LEFT FINGERS ON A S D F
PLACE YOUR RIGHT FINGERS ON J K L
A S D F J K L
S
SCORE
** TYPE THE LETTER THAT APPEARS **
PRESS F1 TO RERUN THE PROGRAM
PRESS F7 TO RETURN TO THE MENU

## TYPEMASTER

(TRS-80 only)

TYPEMASTER is a tutorial program for learning and exercising touch-typing with the TRS-80 Model I or III microcomputer. This program requires no previous computer experience because only the typewriter-like qualities of the microcomputer are used. TYPEMASTER is very convenient for self-instruction or for the classroom.

The program begins with an explanation of the principles of touch-typing and a graph of the home position of the fingers on the keyboard. The following lessons familiarize the student with the positions of the characters, drilling him or her in the use of the correct fingers. Following these lessons you are presented with achievement tests and drills in single words that require either or both hands. The final lessons are drills and tests in typing words and sentences.

Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

## MONKEY BUSINESS™ TYPING TUTOR

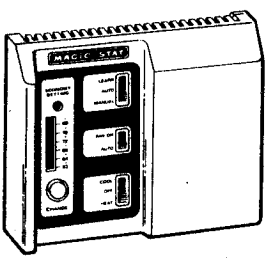
(Apple only)

The MONKEY BUSINESS ™ TYPING TUTOR game was written with the objective of providing the new typist with the keyboard skills needed for effectively using a typewriter or word processor. It allows practice at 20 distinct levels. You may practice the home row, home and top rows, home and bottom rows, or all three rows. The computer (patiently) provides the exercises, testing, and rewards.

The game aspect takes much of the tedium out of learning touch typing. It is a race. Your monkey is picking coconuts in competition with a computer robot coconut picker. These coconuts turn into gold as they are picked.

Requires 48K and one disk drive.

Price: $17.95 Diskette




# MAGIC-STAT

## TALKING TYPEWRITER

(Apple only)

TALKING TYPEWRITER is designed to help children master the alphabet, numbers, and the standard typewriter keyboard by turning your Apple II into a talking arcade game. A facsimile of the keyboard is presented on the high-res screen. A number or letter is "spoken" and the corresponding symbol is identified on the keyboard graphic. By pressing the correct key, the child creates a blimp that contains the symbol and by pressing the key again, may attempt to "shoot down" the graphic.

For ages 3 to 8.

Requires 48K.

Price: $19.95 Diskette

## SCHOOL ATTENDANCE MANAGER
(TRS-80 and Apple only)

SCHOOL ATTENDANCE MANAGER (SAM) alleviates the time consuming and endless chore of attendance record keeping. This versatile, easy-to-use program will automate the attendance needs of any size school. The small-school version accommodates 800 students. The large-school version stores data for 2,400.

SAM prints a daily absentee report, an individual absentee record for any student, state-required monthly attendance registers, homeroom lists, class rosters, letters to parents, lists of students who have been absent more than a specified number of days, and mailing labels.

SAM keeps track of absences, daily and cumulative tardies, half days, religious absences, withdrawals, and home instruction. All entries can be changed when necessary and there is a provision for excused or unexcused absences or tardies.

SAM can display or print an individual student's attendance record or the entire school's. It will automatically generate letters to parents of students who have been out for a multiple of four days, and it will list all who have been absent for two consecutive days.

The Master Disk File stores such essential data as student names and addresses, birthdates, codes, telephone and homeroom numbers, and sex. The program has a reset feature so you can clear the disk of graduating students and not have to re-enter the remainder of the school. A clearly written guide leads the user through all phases of the program's many useful features. The system requires an Apple II+, IIe, IIc, or a TRS-80 Model I or III, plus two disk drives and a printer.

Price: $239.95 (small-school version)
$299.95 (large-school version)
$ 25.00 Demonstration Disk

## TEACHER'S GRADEBOOK
(Apple, Atari, CP/M and IBM diskette only)

For each class in their master file, users of TEACHER'S GRADEBOOK can store, retrieve, summarize, update or otherwise manipulate and report extensive data pertaining to class administration, student rosters, grades, and absences. To evaluate the performance of students, up to seven distinct grade categories may be declared and labelled for each class individually, and as many as 20 marks may be entered for each of those grade categories. A separate file of absence records may also be maintained.

User applications vary considerably so it is impossible to specify precisely how many records can be stored on any one data diskette. For example, given the maximum number of possible users on a single diskette (9), a diskette would most likely be eventually filled by the data pertaining to two classes of 35 students (each) for each user. On the other hand, given three classes of 30 students each for each user, one data diskette should accommodate five users; or given only one user, a diskette will probably accommodate up to 15 small classes or five very large classes of 90 students each.

TEACHER'S GRADEBOOK contains many features, including password protection, easy data entry and retrieval, versatile record structure, and much more.

TEACHER'S GRADEBOOK may be used with either one or two disk drives, though two are recommended. Minimum RAM required is 48K. Printer output is optional. It is never too soon or too late to automate your class record keeping.

Price: $49.95 Diskette

## SCHOOL DISCIPLINE MANAGER
(TRS-80 and Apple only)

SCHOOL DISCIPLINE MANAGER (SDM) keeps an accurate and up-to-date record of discipline information for the Assistant Principal. The data can be entered easily for each student and a running record can be kept to facilitate monthly reports on discipline to the Board of Education.

SDM tracks 29 different infractions in up to 15 different locations by a very simple coding system. It includes:

- dates of infraction
- type of infraction
- location of infraction
- teacher involved
- disposition
- administrator involved

The reports available include:

- A single student's entire discipline record. Invaluable when several administrators have handled different disciplinary incidents for a single student.
- All infractions for a particular teacher.
- All infractions for an individual administrator.
- The number of each type of infraction. Permits administrators to focus on their main problem or problems.
- Two different monthly suspension reports:
  A) names of all students.
  B) number of students, broken down by sex.
- Preaddressed letters to parents
- Mailing labels
- Homeroom lists
- School or class rosters

Use SDM for parent conferences, in preparation for court, or so your teachers can see hard evidence that their complaints are being taken seriously.

This effective program will maintain the discipline records for almost any size school. The small-school version accommodates 800 students; the large-school version 2,400 students. It is menu-driven and easily used by first-time computer users. Thorough documentation guides you every step of the way. The program has a reset feature so you can clear the disk of graduating students and not have to re-enter the remainder of the school.

SCHOOL DISCIPLINE MASTER integrates with SCHOOL ATTENDANCE MANAGER so you do not have to re-enter basic student information when using both programs.

Requires two disk drives, 48K, and an 80-column printer.

Price: $149.95 (small-school version)
$199.95 (large-school version)
$ 25.00 Demonstration disk

## TRACK AND FIELD
(Apple only)

TRACK AND FIELD (TAF) is a complete data handling system for maintaining athletic event records. TAF is designed to take the drudgery out of record keeping. With TAF you may print score sheets, make comparisons, print reports, etc. A minimum amount of pre-season data entry is necessary before running the program.

The disk capacity is: 50 names
15 different meets
8 field events
12 track events

Each athlete may be entered in three events per meet. Requires 48K RAM, 80-column printer, and one disk drive. An 80-column card is optional.

Price: $39.95 Diskette

## PRIMER 83
(Apple only)

As you will see from this description, PRIMER 83 is a unique and effective learning package designed for people with impaired reading skills.

A synopsis of the story behind PRIMER 83 should first be told. Many of you may already know of it from newspaper accounts.

PRIMER 83 was originally written to aid in the rehabilitation of a 30 year old man suffering from "word blindness" (dyslexia). He had a brain tumor which, after removal, resulted in selective memory loss. He worked with many traditional exercises with limited success. With the incentive of sponsorship from Johns Hopkins University, PRIMER 83 was developed to address the needs of this individual and other people with this handicap. PRIMER 83 worked. It also appears to be effective with individuals having other general reading problems.

PRIMER 83 is the culmination of the combined efforts of several people, including the original "student", an expert programmer, a grammaticist, a musician, and several others. It is well thought out and tested.

REQUIREMENTS

- The user *does not* need to have prior experience with a computer or have typing skill.
- A moderate-quality cassette recorder is needed: The instructions given in the manual are also recorded on tape.
- A 48K (or more) RAM Apple II or IIe with one disk drive is needed.
- A black-and-white monitor.
- A paddle connected to port #0 (controls display speed).
- A printer is optional. (Used for printing out test statistics and analyses).
- An ECHO II speech systhesizer is optional. (Used for letter and word prompting — nice but not vital.)

Note that a black-and-white monitor is required. Color displays generally do not have the resolution of the black-and-white units. There is no point in *further* handicapping the student with a low-resolution display.

MODULE DESCRIPTIONS

PRIMER 83 contains several program modules. The main ones are:

- TALKWRITER — This program is designed to familiarize the user with the keyboard. The keyboard is shown on the screen along with the letter to be typed. If an ECHO II is present, the letter's name will be spoken.
- LETTER FLASH — Letters are flashed on the screen and the user has to press the corresponding key. The duration of the flash may be preset as well as the permitted response time. The results may be saved on disk and analyzed later (see TROUBLE SHOOT, below).
- WORD FLASH — This has the same features as LETTER FLASH. The prompts come from a 600-word vocabulary of common words. These words are organized into 24 groups of 25 words each (e.g., ROAD SIGNS, SIMILAR WORDS, etc.). With ECHO II, each word can also be spoken. New lists may be added easily.
- SENTENCE FLASH — Much the same as WORD FLASH. In this case, 6000 grammatically-correct sentences are displayed (and, optionally, spoken). There are also randomly selected grammatical questions regarding the verb, verb tense, active and passive, subject, subject sex, subject plural and subject singular, object, and punctuation marks.
- MUSIC — Four songs may be played through the Apple's speaker, with the words shown on the screen. The tempo is controlled by the paddle.
- MUSIC EDITOR — You may create your own tunes and words. You may load, save, or play a song, add, change, insert, or delete a note — easily! Notes range over two octaves and can be full to 1/32 notes. Words or syllables can be associated with each note.
- SCI-FI STORY — A nearly infinite variety of short science fiction stories can be created and displayed. The display speed is paddle controlled.
- TROUBLE SHOOT — All of the question-and-answer modules have the option to save the results (statistics). The statistics include: number of presentations, per cent errors, average response times, and specific errors. These may be printed if desired. Also, TROUBLE SHOOT will analyze the specific errors to determine the possible perceptual or motor difficulties of: rotation, inversion, similarity, correct key/wrong hand, word truncation, word extrapolation, etc.

OTHER FEATURES

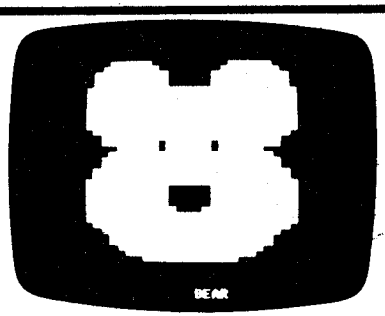
- You may choose to use upper- or lower-case letters.
- The character set may be changed (ASCII, Roman, Collasal, and Flow are currently available; you may also design your own font).
- The keys may be re-defined. The keyboard can be put in ABC order instead of QWERTY.
- The 47-page manual is exceptionally clear.

ADVANTAGES

- PRIMER 83 is *not* an undirected drill-and-practice program. It can be used to identify weak areas and to strengthen skills in those areas.
- PRIMER 83 is aimed at the reading-impaired audience. The instructions, prompts, etc., are designed to avoid frustrating the students. As many cannot read, the manual is also supplied on cassette, and voice prompts (ECHO II, optional) are available.
- PRIMER 83 allows the teacher to educate more effectively. Less time is spent administering exercises and more time is available for analyzing the results and redirecting the student.
- PRIMER 83 blends in enough of the game reward to make the exercises fun rather than boring.

Price: $99.95 Diskette

Paddles and ECHO II must be purchased separately.




If you have a young child (or grandchild), keep HODGE PODGE in mind. Children love it, and learn, too!

See the EDUCATION section for details.

## FAST FOURIER TRANSFORM TUTORIAL

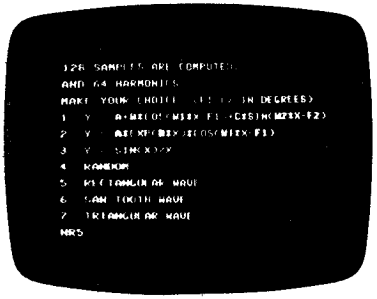
(Apple only)

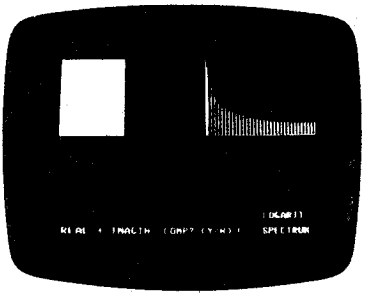
FAST FOURIER TRANSFORM TURORIAL is a menu driven, graphics oriented education program designed for both class room use and self-instruction. The program itself presumes no knowledge of the mathematics associated with Fourier Transforms. Rather, it permits hands-on experience showing (in high resolution) what the spectra of various waveforms look like. For example, you may examine the spectra of mixed sinusoidal, rectangular, saw tooth, triangular and random inputs under an infinite variety of conditions. You may even input your own signal. Further, you may examine the spectra of several window functions and digital transmission formats.

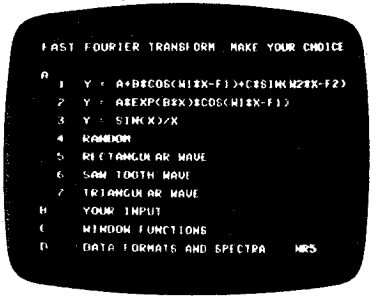
The resulting spectra may be plotted as well as listed. It should be stressed that FFTT is an educational program, which is highly tutorial in character. It does not have the data storage, retrieval and editing features of DYNACOMP's HARMONIC ANALYZER. However, if you want to get a feeling for Fourier Transforms, or already have some knowledge and want to learn more, this is a good program to use.

Requires 48K. Includes a manual which describes in some detail the mathematics of the FFT. Included on the DYNACOMP disk are an Applesoft and a compiled object program.

Price: $24.95






## Z-TRANSFORM TUTORIAL

(Apple only)

This is the second selection in DYNACOMP's complex plane analysis educational series, the first being FAST FOURIER TRANSFORM TUTORIAL. In Z-TRANSFORM TUTORIAL poles and zeroes and their relation to the Z-transform are described theoretically (in the manual). The resulting filter response function is discussed with respect to rational polynomials and "tapped delay lines". The tapped delay line representation is shown to be amenable to a "difference equation" implementation of a digital filter.

The software is keyed to the manual. You may enter either the pole/zero representation, or the rational polynomial filter function coefficients for up to 30 poles and zeroes. If you give the poles and zeroes, the program calculates the transfer function. If you give the transfer function, the program will give you the poles and zeroes. Also, you are provided with high resolution plots of the amplitude response and impulse and step function responses. Several examples are given.

If you are interested in learning about the Z-transform, the "unit circle", poles and zeroes, and so on, try Z-TRANSFORM TUTORIAL.

Price: $24.95 Diskette

## DIGITAL FILTER DESIGN TUTORIAL

(Apple only)

This is the third member in DYNACOMP's complex plane analysis series. In DFDT the subjects of transversal, comb and interpolation filters are theoretically discussed (in the manual) with several examples. Windowing (Bartlett, Kaiser, Gauss, raised cosine, etc.) is considered, along with practical approximations to ideal filters.

The software portion of this package is very easy to use and is keyed to the theory in the manual. You may examine the design of filters from several different aspects. For comb and interpolation filters you may graphically (high-resolution) look at the amplitude and phase response of a variety of transfer functions under an infinity of coefficient conditions. For transversal filters you can graphically and numerically look at the coefficients associated with many standard types of filters, and truncate/window the resulting series coefficients to examine the practical effect on the filter response. You can even multiplewindow. In addition, you can input your own amplitude response coefficients and truncate/window them. The variety of high resolution graphical examples is infinite, making DFDT an excellent tool for either home or classroom instruction. Requires 48K.

Price: $24.95 Diskette

## S-PLANE TUTORIAL (SPT)
(Apple only)

This is the fourth member in DYNACOMP's complex plane filter analysis series. The SPT manual discusses the development of analog filters through the use of pole/zero representations. Subjects covered include the narrow and broad band approximations, the unit circle, the Butterworth, Chebychev and linear phase solutions.

The second part of the package, the software, allows the determination of complex poles and zeroes and graphical examination of the frequency responses associated with the material in the manual. You may analyze the responses due to the poles/zeroes which you provide, or determine the poles/zeroes and responses for various order Butterworth, Chebychev and Thompson filters. The variety is infinite, and emphasis is placed on graphical displays.

Price: $24.95 Diskette

## TWO-PORT ANALYSIS TUTORIAL
(Apple only)

Here it is — number seven in DYNACOMP's electrical engineering tutorial series. This analysis package allows you to learn about and examine the transfer characteristics of "black boxes" having two ports (four terminals). For example, a transistor may be considered a four-terminal device if the base is used for two of the terminals (e.g., common base configuration). The device description used is based on Y-parameters.

The manual has two sections. The first deals with the theory behind Y-parameter descriptions and response stability. The second part deals with computer examples, in particular the design of a transistor amplifier having several RLC components.

As with the other packages in this series, the software is graphics-oriented. The equivalent circuit is pictorially displayed on the screen, as well as the $G_L$ circle corresponding to the stability limit. Also superimposed are the $B_L$ circles.

This package is ideal for the student or professional who is studying linear systems. Price: $24.95 Diskette

## INVERSE FAST FOURIER TRANSFORM TUTORIAL
(Apple only)

INVERSE FAST FOURIER TRANSFORM TUTORIAL (IFFT) is an educational program which was designed to be used by teachers and students to familiarize themselves with the IFFT and its effect on transforms. It is also useful to engineers and scientists who wish to learn about the IFFT, its operation, and the general ability to reconstruct signals (time functions) from their discrete Fourier transforms.

The documentation is broken into two parts. The first part deals with the theory of the Fourier transform pair in general, the discrete Fourier transform (DFT), the Fast Fourier transform (FFT), and frequency domain filtering. Many graphical examples are included throughout.

One of the unique features of IFFT is that it also contains a routine which shows the distortion of serial (e.g., NRZ) transmissions by a telephone line. You specify the length of the line and the baud rate, and the program graphically displays the distorted bit pattern. Also shown are the "eye patterns" used by communications engineers to evaluate such transmission lines.

The second part relates to operating the program. To run the program, just follow the prompts. You can specify various standard signals (or your own) and the sampling interval. Up to 128 points may be specified (or loaded from disk). Or you can specify the harmonics (up to 64) directly. You may also specify the filter or use a pole/zero description. Real and imaginary coefficients may be used.

You do not need to know how to program to operate IFFT. However, you should be familiar with FFT (see our FFT Tutorial) in general. Requires 48K

Price: $29.95 Diskette

## BILINEAR TRANSFORM TUTORIAL
(Apple only)

Here is number five in the advanced electrical engineering tutorial series. This one deals with the bilinear transform and how it can be used to derive digital filters from analog RLC filters. The package layout is similiar to the others; tutorial documentation with examples, and graphics oriented software. Requires 48K.

Price: $24.95 Diskette

## POWER AMPLIFIER DESIGN TUTORIAL
(Apple only)

Meet number six in DYNACOMP's electrical engineering tutorial series. This installment deals with vacuum tube RF power amplifiers. As with the other numbers of the series, the theory is covered in detail in the documentation, with emphasis on graphical analysis. The software graphically deals with the amplifier design factors, plots the path of operation and anode current, and calculates more than nine other characteristics. Included is a complete sample exercise for designing a Class B amplifier. A nice educational purchase!

Requires 48K.

Price: $19.95 Diskette

## PHASE-LOCKED LOOP TUTORIAL
(Apple only)

Here is number eight in our electrical engineering tutorial series. The theory part of the package includes discussion of synchronized multivibrators, VCO's the NE555, MC1648, phase detectors, AFC, hold-in range, etc. The program part allows you to experiment with building a phase-locked loop from phase-detector, low-pass filter, and VCO blocks. You may simulate TV synchronization (a picture of Kirchoff may be "played with") and examine hold-in and lock-in both visually and analytically. Of particular interest are the effects caused by the use of various filters and filter functions.

PHASE-LOCKED LOOP TUTORIAL may be used in a college-level electrical engineering course as a teaching aide, or as a refresher.

Requires 48K and one disk drive.

Price: $49.95 Diskette

## COLLECTIONS

The entire set of ten electrical engineering tutorials may be purchased for a combined price of $199.95. This includes ten manuals and ten diskettes in a plastic storage box. Sorry, collections do not count toward the DYNACOMP 10%–20% volume discount.

## FREQUENCY DOMAIN FILTERING TUTORIAL

(Apple only)

FREQUENCY DOMAIN FILTERING TUTORIAL (FDFT) is DYNACOMP's ninth installment in its growing engineering tutorial series. This particular addition is an extension of FAST FOURIER TRANSFORM TUTORIAL to two dimenensions.

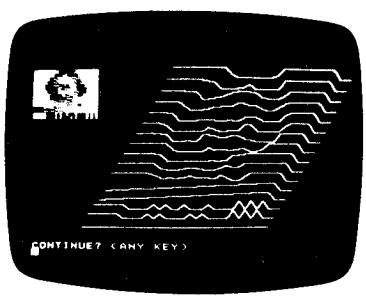
As usual, the package consists of two parts; the manual and the program diskette. The manual describes the theory behind the two-dimensional discrete Fourier Transform along with pictoria' illustrations (3-D representations are included). You may then visually examine the results of transforming and filtering various two-dimensional patterns (including bars, sine waves, good old Kirchoff, etc.). The results are displayed as either a spectrum density plot (picture) or a 3-D representation. You may choose from a menu of ideal filters, or input your own. You may choose images from the menu, or create your own.

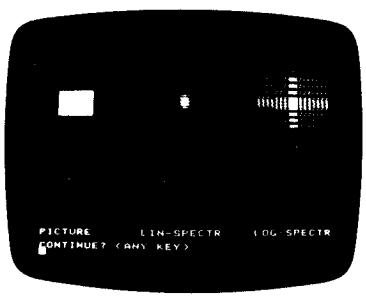
Because the calcualtions involved are so time consuming, you are provided two versions of the calculation program: a compiled version (default) and a source (Applesoft) version for examination. Also, instructions are given regarding how to generate your own images. You may also load images from other programs in the DYNACOMP engineering tutorial collection.

Requirements: 48K RAM, one disk drive, and some initial familiarity with Fourier Transforms. FDFT is an ideal tool for advanced image students, photographic science students, or scientists interested in reviewing or gaining new knowledge. Prior experience with FAST FOURIER TRANSFORM TUTORIAL is recommended, but not absolutely necessary.

Price: $29.95 Diskette

Sample display:






## STOCK MASTER/STOCK PLOT

(Apple diskette only)

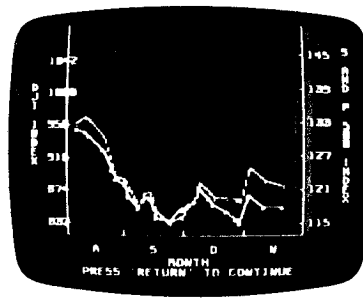
STOCK MASTER and STOCK PLOT are companion programs designed to help the investor record fiscal data on companies of interest, record stock transactions, and track price action on these same companies. With these programs you may:

- Maintain records for up to 30 stocks.
- Store 10 years of fiscal data for each stock (including revenue, earnings per share, return on equity, quarterly earnings per share, and quarterly dividends per share) and historical price data limited only by diskette storage space.
- Maintain up to 8 portfolio files which are composed of any combination and any number of shares of the stocks you are tracking.
- Record up to 20 buy/sell transactions for each of the stocks you are tracking.
- Enter transactions in a capital gains file and list or print your capital gains by year and by short or long term.
- Enter prices of any or all of the stocks at whatever frequency you desire. In addition to writing files to maintain historical records of those prices, STOCK MASTER will maintain files of the Dow Jones Industrial Index, the Standard and Poor 500 Index, and the NASDAQ Index at the same frequency.
- Calculate "trailing" Price/Earnings ratios for any stock for which you have entered quarterly earnings data for at least the last four quarters.
- Display the value of any of the portfolios you are maintaining using the most recently entered price for each stock.
- Plot graphs of the price history of any stock vs. any other or vs. on the Indexes. Axes are automatically scaled and labeled on the hires screen. Hard copies may be readily obtained by either dumping directly to a printer or to a disk and then to a printer of your choice in a later step. Data can be plotted for the last 3, 6 or 12 months.
- List the historical price record of any stock or portfolio.
- Plot the historical value of any portfolio as a percent of the first value plotted.
- Alter portfolios at any time and, if desired, maintain a cash balance for each portfolio.

STOCK MASTER/STOCK PLOT requires 48K of RAM, can operate with one or (preferably) two drives, and can print tabulations to a hardcopy device. Comes complete with a 32 page manual and sample files.

Price: $59.95

Sample display:



## STOCKAID

(32K Atari Diskette only)

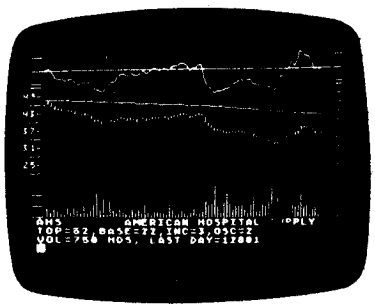
STOCKAID is a stock market data entry and analysis program which allows the user to plot and graph the performance of investments and to derive many useful calculated indices from the data. Using the daily volume, daily high, low and close figures (all of which are readily available from the newspaper) STOCKAID creates data files on stock performance. Data entry is remarkably simple and streamlined, and editing and correction are easily accomplished. Seventeen stocks may be stored per diskette, and the file on each stock may contain data for up to 239 days of stock trading.

After data files are created, STOCKAID permits review and analysis of the data in many ways which are useful to investors. Multiple options are available for displaying graphic representations of data, all of which are accessible from simple menu choices. All graphs have labeled axes, allowing for easy interpretation of data. Trend lines may be superimposed on the graph for enhancement of the display. A short term oscillator and long term moving average are automatically displayed along with daily volume, high, low and close. Point and figure plotting is also available for each stock.

Another feature is the ability to calculate stock splits and to reprocess the data file automatically based on the price adjustment factor. These features, along with the intelligent and pleasant user interaction format make this the premier stock charting and analysis program available today. This is a must for the interested dabbler as well as the serious investor.

Price: $29.95 Diskette

Sample display:




## PORTFOLIO MANAGEMENT

(Apple, CP/M, and IBM diskette only)

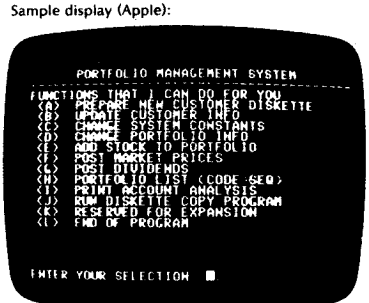
The PORTFOLIO MANAGEMENT package was written by a stock broker to help manage portfolios for individual customers. With this program, data files can be easily created and kept up to date. A variety of reports, attractively and professionally laid out, can be generated for clients. The user may define his/her own investment categories. PORTFOLIO MANAGEMENT is a top-quality professional tool which will not only provide you with conveniences but will also serve to enhance your appearance as an efficient and up-to-date advisor to your clients. Comes complete with a 30-page manual.

The CP/M version is aimed at the individual user. It contains all of the basic features of the Apple version, but it is tailored to the individual investor. In addition, detailed file sorting and plotting capabilities have been added. The CP/M version includes a 67-page manual (50 pages of instructions and examples and 17 pages of program listings) and requires 48K.

The Apple version requires two drives.

Price: $69.95

Sample display (Apple):


PORTFOLIO MANAGEMENT SYSTEM
FUNCTIONS THAT I CAN DO FOR YOU
(A) PREPARE NEW CUSTOMER DISKETTE
(B) UPDATE CUSTOMER INFO
(C) CHANGE SYSTEM CONSTANTS
(D) CHANGE PORTFOLIO INFO
(E) ADD STOCK TO PORTFOLIO
(F) POST MARKET PRICES
(G) POST DIVIDENDS
(H) PORTFOLIO LIST (CODE SEQ)
(I) PRINT ACCOUNT ANALYSIS
(J) RUN DISKETTE COPY PROGRAM
(K) RESERVED FOR EXPANSION
(L) END OF PROGRAM
ENTER YOUR SELECTION

## MICROCOMPUTER STOCK PROGRAM (MSP)

(available for all computers)

The MICROCOMPUTER STOCK PROGRAM (MSP) is designed to help you analyze stock prices. It provides timing signals for stock purchases and sales. Buy and sell indicators are generated by means of a unique auto-regressive price trend analysis. MSP requires only weekly high, low, and close prices and the volume of shares to aid your investment decisions. It has several features:

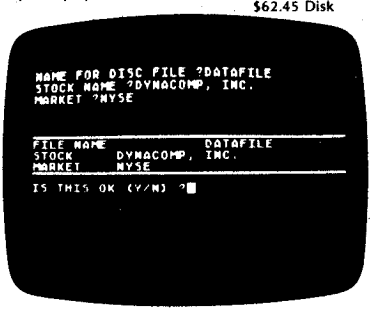
- generate buy/sell signals for the last 8 weeks
- print a volume/price/moving average chart on any 80- or 132-column printer.
- complete data maintenance facilities, including on-screen viewing and easy editing for adding, changing or deleting data.
- simple adjustment for stock splits and dividends
- list price/volume data to printer
- completely menu driven and easy to use.

MSP is provided with documentation which includes instructions for operating MSP and tips on how to employ MSP effectively.

System requirements: cassette, with 16K RAM (minimum) or one diskette, with 32K RAM (minimum). Printer optional.

Price: $55.95 Cassette
$59.95 Diskette
$62.45 Disk

Sample display (Osborne):



## MICROCOMPUTER CHART PROGRAM

(TRS-80, CP/M, and IBM only)

MICROCOMPUTER CHART PROGRAM (MCP) is all the software you need to create charts to follow the stock market. MCP uses either daily or weekly stock high, low and close prices and trading volume. The data files it creates are completely compatible with those created by MICROCOMPUTER STOCK PROGRAM (MSP). MCP has features which make it unique among the investment software available today. These features include:

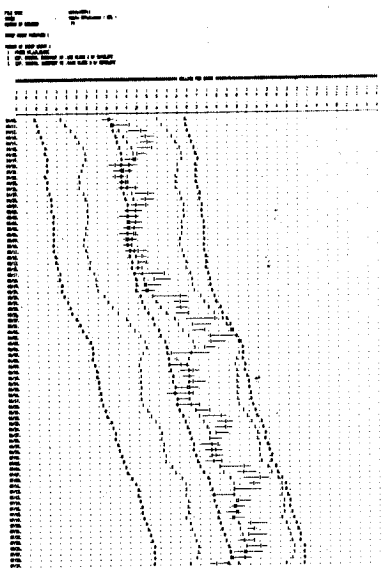
- the same data editing, maintenance, printing and price adjustments as MSP.
- stock price charts with:
  price range, range and close, or close
  prices transformed by:
    moving average
    centered moving average
    exponential smoothing
  inverse of any price transform as a bar chart
  constant-width envelope for either centered moving average or exponential smoothing.
- volume bar chart.
- smoothed volume line.
- up to 3 stock price or volume charts overlaid on a chart.
- smoothed velocity (price change) line.
- on balance volume, using percent price change.
- support for printers from 31 to 223 columns per line.

MCP can use the system you have to the fullest. Additional memory and storage allow larger price/volume files to be created and used. A wider printer allows more complex charts to be generated.

Requires 32K and printer (at least 31 columns wide).

Price: $59.95 Cassette
$63.95 Diskette

Sample display:



## THE INVESTING ADVISOR

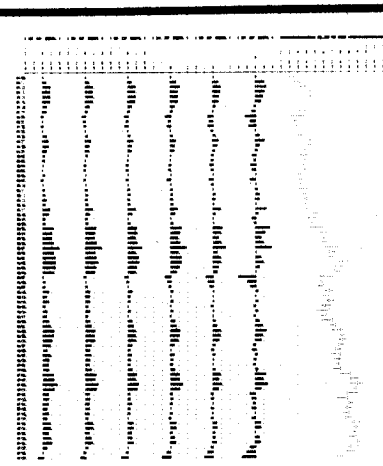
(TRS-80 diskette only)

THE INVESTING ADVISOR is a tool that will help the investor make unemotional decisions about the buying and selling of his investments. It incorporates a means of timing the purchase and sale of investments based on a price-trend analysis and on buy/sell rules. It includes the ability to track both long- and short-term trends, so that the investor can pick the best strategy for his needs. Up to 64 long-term and 64 short-term investments can be tracked at the same time. The investor can initialize his data base, add or delete investments, calculate the action to take and adjust the data base for splits of the investment. Data is entered daily for short-term investments and is entered weekly for long-term investments. The data entered is the closing price for the investment, available from the newspaper. It is in the form of the price as it appears in the paper.

The objective of the long-term investment strategy is to go over a year, if possible, without selling. The selling rules provide a reasonable compromise between the desire to go long-term and the need to protect profits or to prevent substantial losses, if the investment turns down significantly. The objective of the short-term investment strategy is to maximize capital gains without regard to the tax consequences of selling. The selling rules provide a compromise between giving the investment room to maneuver as it moves up and the need to protect profits or to prevent substantial losses, if the investment turns down.

The program has been written to be as structured as possible. The logical levels of the program have been indented so that the user can understand the flow of the programs, if he desires. Requires 48K.

Price: $39.95 diskette



## MSP and MCP COLLECTION

(TRS-80, CP/M, and IBM only)

MICROCOMPUTER STOCK PROGRAM and MICROCOMPUTER CHART PROGRAM are available as a collection for $93.95 (two cassettes), $99.95 (two diskettes) or $104.95 (two disks). Add $6.00 for double-density diskettes. This collection can not be applied towards quantity discounts.

## MICROCOMPUTER BOND PROGRAM

(available for all computers)

MICROCOMPUTER BOND PROGRAM is designed to help you evaluate bonds. It provides a quick and easy way to estimate the prices and yields of fixed income securities under a broad range of assumptions and estimates about the future.

The price of a bond depends upon several factors including the risk of the issue, the interest it pays, the date it matures (or is subject to early call), the general level of interest in the market, and the expectations of the market for the future course of interest rates. The yield of a bond is influenced by the investor's tax rate, by the length of time the bond is held, and of course, by the price paid for the securities.

While MBP cannot help you predict the future, it can surely show you the results of any combination of circumstances you predict on the price of a fixed income security. And knowing that, you can make better decisions concerning the issues you invest in.

MBP provides:

Complete bond data entry, editing, listing and storage capabilities.

A flexible analysis environment, including market interest levels and tax rates.

Bond yields before maturity, showing estimated price, total dividends, and gross yield.

Bond prices estimated over time, at various market interest rates, evaluated to either maturity or early call.

Bond valuations, showing current yield, and before and after tax yield to maturity.

With MBP, the questions you have concerning the future performance of bonds can be answered quickly, easily, and with a minimum of work.

Cassette version requires 16K; diskette version 32K.

Price: $55.95 Cassette
$59.95 Diskette
$62.45 Disk

## IRMA

(Atari and IBM only)

Investment Records Management Aid (IRMA) is an easy-to-use, all-inclusive tool for everyone interested in financial, tax and investment planning. It provides convenience and efficiency for recording and tracking essential investment information and versatile, user-friendly methods to take advantage of this information for all of your planning requirements.

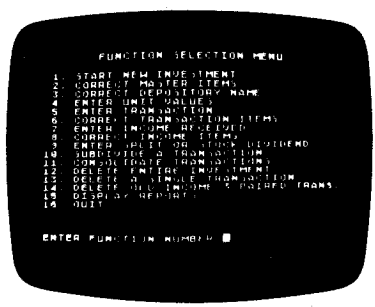
Pertinent data for a diversified portfolio of up to 90 different investments are entered quickly and easily. IRMA handles common stocks, preferred stocks, bonds, deposit accounts, funds, partnerships, options, taxable and non-taxable investments.

IRMA's varied presentations of your own data will support your decision-making in three major areas: financial planning, tax planning, and investment planning. Available aids include:

- Cash income forecast for any month.
- Annual income distribution by month.
- Cost-versus-value summaries.
- A complete history of all investment activity.
- Capital gains/losses summaries showing annual or year-to-date short- and long-term results.
- Income totals by investment and by type.
- Percentage distribution of portfolio by category.
- Investment value comparisons between dates.
- Records of shares owned, certificate numbers, income history, etc.

A printer is supported, but not required.

Sample display (Atari): Price: $49.95 Diskette




## BUYSEL

(CP/M and IBM only)

BUYSEL is suitable for both the curious beginner and the serious investor. It is a comprehensive software package for peforming analyses of stocks, commodities, and options. It contains the following features:

- Four distinct trading methods and money-management systems, all of which produce explicit buy/sell transaction signals:
  - Moving Average Method
  - Price Channel Method
  - Buy Low, Sell High System
  - Dollar-Cost Buying System
- Black-Scholes call option model over any time period for a common stock.
- Statistical correlation computation between several stocks or commodities. This quantifies the degree of like behavior for different price actions over a common time period.
- Automatically scaled closing price charts requiring only a normal 24-line x 80-character video screen.
- Price data entry and validation on a daily basis, or quick approximation of long periods of real price data.

The inclusion of four different trading methods and money-management systems allows you to experiment and find the most suitable technique for trading a particular stock, option, or commodity. It also enables an investor to identify the technique that best matches his/her own investment objectives and style. Price charts show at a glance the price action for a selected price file over any chosen period of time. All transaction signals from the various methods are displayed on the charts as well.

Using a convenient menu structure with several HELP commands, BUYSEL has been designed to be extremely user-friendly and easy to operate. The documentation includes fully detailed operating instructions as well as an analytical description of all techniques and analyses performed.

Price: $149.95 Diskette
$152.45 Disk

NOT AVAILABLE on single-density Osborne or single-density North Star CP/M diskettes — it contains 110K of programs!

Requires MBASIC release 5.2 or higher (BASIC-80).

## OPTIONS ANALYSIS

(TRS-80, Apple, Osborne, CP/M, and IBM only)

OPTIONS ANALYSIS provides one of the most complete analyses available for PUT and CALL prices as a function of both stock price and time-to-expiration based on the principal investment strategies which one might employ. The analyses present information on the profit potential both in dollars and in annualized percentages (where applicable) for any desired range of stock price and time-to-expiration.

OPTIONS ANALYSIS is menu-driven, easy to use and is accompanied by a very professional manual which fully introduces the concept of options and "walks" the user through the various menu options. The basic program elements include determining the values of PUT and CALL options, PUT and CALL writing, spreads and straddles. Altogether six strategies are provided. The Black-Scholes formula is used for determining the values of CALL options. The primary strategy for call writing is "hedging", and is a subcase of the spreads strategy for the case in which the options only are sold.

Typical inputs to the program are (CALL writing case)

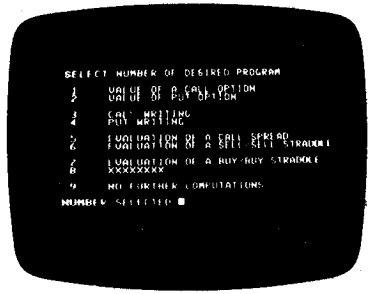
- Purchase price
- Number of shares
- Number of calls sold
- Percent interest
- Volatility percent
- Exercise price of CALL
- Price of CALL option
- Initial buy/sell date
- Option expiration date
- Stock price at which to begin computation
- Price increment, highest price
- Dividend information

The corresponding outputs are:

- Value of CALL and profit on the day the position was established
- Results of position on the last day

OPTIONS ANALYSIS features the ability to try other approaches so as to facilitate experimenting. An 80 column printer is supported. Requires 48K.

Sample display: Price: $99.95 Diskette


SELECT NUMBER OF DESIRED PROGRAM
1 VALUE OF A CALL OPTION
2 VALUE OF PUT OPTION
3 CALL WRITING
4 PUT WRITING
5 EVALUATION OF A CALL SPREAD
6 EVALUATION OF A SELL-SELL STRADDLE
7 EVALUATION OF A BUY-BUY STRADDLE
8 XXXXXXX
9 NO FURTHER COMPUTATIONS
NUMBER SELECTED

## NYINDEX

(Atari diskette only)

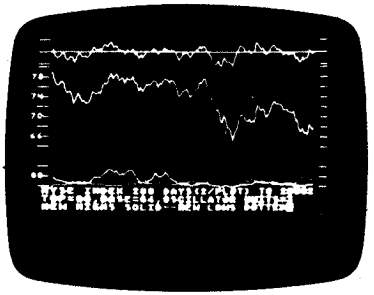
NYINDEX is a comprehensive software package for storing, retrieving and plotting New York Stock Exchange information. The daily inputs accepted are the NYSE composite index, advances, declines, new highs and new lows. The plotting functions are exceptionally nice. They include displays of the NYSE index oscillator, new highs, new lows, cumulative advances - declines and NYSE long term average.

The market history display consists of three bands of data and a legend. The top band gives the short term oscillator representing the difference between the day's index and its short term moving average. The middle band shows the Composite Index Action for the period requested, and optionally the Cumulative Advance - Decline Line and Long-Term Average. The bottom band shows the short term moving averages for the new highs and lows.

Other NYINDEX functions included involve trend line points and extensive disk review/editing ability.

The NYINDEX package comes complete with over two years' worth of daily data. Our masters are updated monthly and updates are available at any time for a five-dollar service charge (plus postage and handling). Requires 32K.

Sample display: Price: $29.95



## ATARI PROGRAMMING HINTS:

### HAS A KEY BEEN PRESSED?

How often have you seen "PRESS ANY KEY TO CONTINUE"? One way of checking to see if a key has been pressed is to look at location 753:

0 = No key pressed
3 = Any key pressed

### TOP AND BOTTOM OF MEMORY

The position of the top of memory (as far as the operating system knows) is stored in locations 741 and 742. The corresponding position of the bottom of memory is stored in 743 and 744.

By manipulating MEMTOP, you can put aside some memory for your own use. For example, you might want to pass values between chained programs by POKEing them into the reserved memory area. In our VALDEZ program, a 64K *bit* map is stored this way.

### KILL THE BEEP

POKE 65, 0

## OPTIMAC
(TRS-80 and Apple only)

OPTIMAC is a work-day simulation for machines. Its purpose is to maximize the overall output of interrelated production equipment. The optimization is based on four different machine relations commonly found in agriculture, construction, transportation and industry. A maximum of 12 machines of three different types can be processed in each simulation for a total of 36 machines. Once the relations, machine types and other data has been entered, OPTIMAC will simulate an 8 hour work-day (at 2 minute time-increment intervals), for these conditions and quantities. The resulting simulated work-day is displayed graphically and numerically. A simultaneous graphing option is available in the program. This option is designed to help the user visualize the case being considered. OPTIMAC can also do repetitive simulations to find the best possible combination of machines in an optimization routine for minimizing idle machine time.

Cassette version requires 16K. Diskette version requires 32K.

Price: $39.95 Cassette
$43.95 Diskette

## DATEBOOK
(CP/M and IBM only)

Here is a datebook software package which is both very effective as well as exceptionally easy to use. You enter the date, from/to, subjects and comments. The date can be anything legal; DATEBOOK contains a perpetual calendar. The from/to can be the hours of the meeting, or can be names (from John Smith to Jim Jones). The subject is your choice (lunch, staff meeting, date, etc.). The comments may be descriptive (e.g., "discussion of the state of product XYZ"). You can freely search and sort on any of the above categories. For example, you may want to look up all memos to Jim Jones, or lunches between 1 and 3 pm ("I remember going to lunch with him between 1 and 3, but what was his name?"). You may easily add information, edit, search for word/phrases and sort on any category. Includes many features which specifically minimize the time spent on date entry. Comes complete with a 32 page manual which clearly describes program operation and sample uses. Requires 48K, printer optional. An ideal package for managers.

Price: $29.95 Diskette
$32.45 8" Disk

## OPERATIONS RESEARCH TUTORIAL
(Apple Only)

The DYNACOMP OPERATIONS RESEARCH TUTORIAL package is a collection of 17 menu-selected programs which provide data file creation, manipulation, and calculation capabilities in support of the analysis of Payoff Tables, Simplex Linear Programming, Distribution/Transportation Methods and CPM/PERT analysis. The programs and accompanying documentation are aimed at the individual who would like to learn about these methods as well as use them in his or her job or business. The manual includes not only instructions on how to use the programs, but also illustrative examples which the user may practice with. The programs and documentation are broken into four basic sections.

The Payoff Tables section provides a *State of the World/ Alternative Decisions* matrix which can be examined under the following criteria:

1. Certainty
2. Risk
3. Uncertainty
   a) Laplace equiprobable futures
   b) Wald minimax/maximin
   c) Plunger
   d) Hurwicz coefficient of optimism
   e) Savage lost opportunity

In essence, you are supplied an evaluation of the possible choices in a way which suits your risk-taking posture.

The Linear Programming section provides an easy-to-use linear optimization. The program not only iteratively seeks the optimum subject to the constraints you have provided, giving the value of the objective function at each step, but also displays the *dual solutions* (sensitivity of a change in each constraint), cost ranging tables (amount variables may be changed without affecting the position of the optimum) and the resource sensitivity table (how far the supply of a particular resource or constraint can vary before the solution is affected). These outputs very effectively tell you how to operate your plant, mix your portfolio, etc., and what variables to watch in particular.

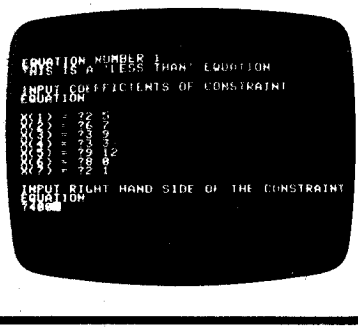
The Distribution/Transportation Methods section uses the linear programming technique to deal with supply/demand problems. Given the cost or profit associated with each channel between suppliers and consumers, the overall distribution mix may be optimized and the total cost/profit determined.

The CPM and PERT section requires some prior knowledge of drawing scheduling diagrams, or "bubble charts". The program takes the data from these charts, organizes it, and helps provide a critical Path Management or Program Evaluation and Review Technique analysis. Since the CPM and PERT data structures are similar, means are supplied for converting data files between the two, as well as general editing. With this program you may establish the critical path, examine the likely range of completion times, "crash" the critical path, examine slack time effects, project cost, and sort by project parameters. The program *does not* plot the chart — you must do that. However, given the chart and this program, you will be in a very good position to analyze the project and its sensitivities.

Requires 48K and one disk drive.

Price: $99.95 Diskette

Sample display:


EQUATION NUMBER 1
THIS IS A "LESS THAN" EQUATION
INPUT COEFFICIENTS OF CONSTRAINT EQUATION
X( 1) = ? 2
X( 2) = ? 7
X( 3) = ? 3
X( 4) = ? 5
X( 5) = ? 12
X( 6) = ? 8
X( 7) = ? 1
INPUT RIGHT HAND SIDE OF THE CONSTRAINT EQUATION
? 40

## SMALL BUSINESS SYSTEM
(Atari only)

At last a comprehensive business software package for the Atari computer! SBS was written by a physician to handle the accounting, examination and scheduling chores involved in his practice. However, other than the items specific to examinations, SBS is a general small business system which can print checks, maintain a mail list, send statements, and more. You can get an idea of the functions involved in SBS from a listing of the contents of the manual:

ACCOUNTS
- New Account
- Change Account
- New Account with Transaction
- Account Information
- Referral Note
- Statements
- Individual Statement
- Credit Accounts
- Outstanding Accounts
- Mailing List
- Accounts List

TRANSACTIONS
- New Transaction
- Transaction List
- Transaction Totals
- Account Transactions
- Bank Deposit

CHECKS
- New Check
- Checks List
- Checks Totals
- Check Purpose Only

EXAMINATIONS
- New Examination
- Change Examination
- Print Examination
- Birthday Note
- Recall Note
- Examination List

Originally SBS sold for $199.95. However, when DYNACOMP took over distribution we decided to go for volume sales with a *low* price.

Requires 48K, two drives, printer. Comes on two diskettes.

Price: $69.95

## HINT
(cassettes)

If you are experiencing tape loading problems, the tape may be unevenly wound and binding. To free it up, sharply slap the flat side of the cassette down on a hard surface. This forces all of the tape against one side of the housing evening up the edges and allowing it to run smoothly again.

## CONTRACTOR MANAGEMENT PROGRAM
(TRS-80 only)

The CONTRACTOR MANAGEMENT PROGRAM (CMP) is a management tool designed to assist general contractors and related businesses in the processes of estimating, planning, scheduling, and controlling of the contracting business. The program has a large menu of functions which provide the user with cost, scheduling, and resource utilization information in a wide variety of formats.

In operation, the CMP provides for setting up of four data files containing information on equipment, personnel, materials, and contracted services. Each entry in each file contains information defining the name, site, location, task, function, cost, and scheduling of the item. Employee entries provide for overtime and doubletime considerations.

Utilizing the data files, the program provides standard searching and sorting functions, and supports multi-file chain operations.

An evaluation command provides the user with a number of options for evaluating cost. The entire file may be processed, or individual entries may be selected and processed. The evaluation command also includes a powerful category evaluation option, which allows the user to figure costs for all unique entries within a category. As an example, a file containing 30 entries for 6 dump trucks, covering 5 different sites and time periods for each truck, would result in the generation of 6 printouts, covering a complete cost evaluation for all entries pertaining to each truck. This command can be performed on a wide variety of categories, providing cost and utilization breakdowns in a large number of convenient formats.

CMP also includes a tracking command. This command allows the user to generate specialized data dumps by any data category. As an example, a printout can be generated to provide schedules for each piece of equipment or employee. Or a printout can be made to show activities at each work site, or to show resources assigned to each task. The track command operations on a number of data categories, providing the user with convenient and useful data in a wide range of possible formats.

CMP is a user-friendly, menu-driven program which prompts for each required input. Error-trapping is provided to prevent data loss in the event of DISK FULL and similiar errors. Line printer output is supported, and is recommended for several of the program functions. Pagination and screen control is included to provide neat, easy-to-read printouts.

CMP includes data verification routines for data inputs and provides full data file editing capabilities. Additionally, a useful updating command is included to allow any data category to be rapidly updated without editing the entire item. This function is especially useful in using old data files to create new ones with a minimum of typing.

Requires 48K, one disk drive and a printer.

Price: $59.95 Diskette

## JOBMASTER
(TRS-80 only)

JOBMASTER is designed for supervisors, managers, and engineers who are responsible for managing small production and assembly programs. Typical examples would include machine shops, sheet metal shops, mechanical assembly areas, and electronic assembly areas. Practically any business involved in manufacturing or assembling a product can make use of JOBMASTER.

The JOBMASTER program allows the user to set up a data file describing each individual operation in the shop area, including the station, contract or project, task name and description, date, employee name and I.D., and shift. Also included is a cost breakdown which includes labor, material, and work station costs, as well as hours worked, projected production and actual production. Full data file editing capability is provided, as well as a very useful automatic updating command which provides easy data file maintenance and permits changes and updates to the data file to be made with great rapidity.

In operation, the program provides full sorting and searching capabilities, allowing the file to be sorted by any data category, as well as limited and global searching for keyword matches. Both text and numeric data may be searched and sorted.

A major feature of the program is the file evaluation command. This command can be used to compute costs and man-hours in a variety of ways. As an example, computation can take place on a station-by-station basis, a contract-by-contract basis, an employee-by-employee basis, or a date-by-date basis. In fact, the evaluation can be keyed to any of eight possible data categories. Costing information is provided on an item by item basis, as well as being totalized by category item.

The evaluation function features a pre-sort option, which allows the file to be sorted by a user selected category prior to the actual evaluation. This feature, along with the category selection options of the evaluation, provide a great selection of choices with regard to data presentation and evaluation results (approximately 64 variations).

JOBMASTER also provides a schedule generating feature. By appropriate selection of category, 8 different types of schedules can be created, such as a day-by-day schedule, contract-by contract schedule, employee-by-employee schedule, and so forth.

Another feature of the JOBMASTER program is the ability to generate cash flow/man loading projections. Again, a number of options are provided to generate cash flow based on a number of possible categories, including contract-by-contract and day-by-day projections.

JOBMASTER's versatility lies in its ability to evaluate and output the contents of the data file in a number of different ways, providing the user with a maximum amount of data in a user-selected format. The user is thus provided with rapid access to vital information to aid in the scheduling, planning, and control functions of the production area.

JOBMASTER operates as a user-friendly program, providing menu-driven commands and prompts for all data inputs. Several convenience and data-verification features are also incorporated into the program to provide for ease of use. Error-trapping is provided to prevent data loss in the event of disk errors or similiar problems.

Requires 48K, disk drive and printer.

Price: $69.95

## BOOKKEEP
(CP/M CBASIC only)

BOOKKEEP is a general ledger and financial statement preparation program designed for small business use. It has a high degree of flexibility and is meant to be used by someone who has a strong familiarity with bookkeeping. BOOKKEEP will permit you to enter transactions, prepare formal financial statements, query account balances, close the books, prepare statements by company segment, and print out both ledgers and journals. The program employs a double entry bookkeeping system and can be used either on the cash (tax) basis or accrual basis.

The major account categories covered are current assets, property/plant/equipment, current assets, debt, equity, revenues, cost of sales, R and D, selling expenses, administration expenses and "other". Each of these categories is further broken down into several subcategories.

BOOKKEEP runs under CBASIC (which comes with many machines, such as the Osborne-1), and requires a printer, 56K.

Price: $69.95 Diskette
$72.45 Disk

## PROJECT CONTROL ONE
(TRS-80 only)

PC1 is a basic project control and scheduling program designed for engineers, managers, builders, and other supervisory personnel who have responsibility for project management. The program provides numerous options and capabilities for obtaining a maximum amount of useful information with a minimum amount of input data. The program does not require the use of CPM or PERT techniques, (or familiarity with them) and was designed for projects whose size and nature do not necessitate a rigorous application of these methods. The program provides user-friendly menu selections for the command functions, and supports hard-copy output as well as CRT display. A printer is highly recommended, as the printed task/event charts and percent complete charts are printer-only functions. Both 80 and 132 column printers are supported, including selectable density types.

Sample display:

Price: $49.95 Diskette

## PAYFIVE

(Apple II 48K Diskette only)

If you run a small business with less than 150 employees and you have an Apple computer, then this program is a must. PAYFIVE is the most complete, flexible and easy to use payroll accounting package available. At every level of function, PAYFIVE offers superior features compared to other payroll accounting packages. Most important of all, these features are extensively documented in a 220 page reference manual that clearly outlines each step. However, the prompts within the program are so clearly presented that reference to the printed manual is usually unnecessary!

Examples of some of the flexible features included in PAYFIVE are:

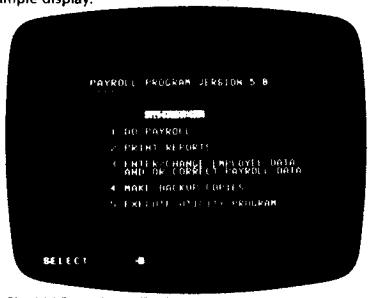
1) Personnel may be paid on an hourly, commissioned or salaried basis, in any combination, and with any mixture for one employee.
2) You may define up to four special departments tailored to your accounting needs.
3) You may define vacation and sick time record keeping procedures.
4) Subtotals are kept on a monthly basis (as opposed to the quarterly totals available with most other packages).
5) You may define up to five optional deduction categories in addition to the usual standard deductions.
6) Federal, State, and Local taxes are compiled automatically, and reports are available for each. Each tax is user-defined. The documentation comes with State Tax Tables for each state to make the initial set up of the program straight forward.
7) Twenty-one different reports are available, including the printing of forms such as the W-2, 940, 941, and State Withholding Tax forms. PAYFIVE will even write checks if you wish!
8) Employees may be paid on a weekly, semi-monthly (both odd and even weeks), biweekly and monthly basis. Different employees may be paid on different bases.

This list does not exhaust the features which PAYFIVE offers. Perhaps the most important feature to mention is that there are special capabilities which will allow your accountant to do your records from the check stubs. This will ultimately save you enough in accounting costs to pay for the cost of the system many times over.

If you do not have an Apple for your business, PAYFIVE might even be enough reason to buy one. We recommend this product highly.

Price: $149.95 Diskette
Manual available separately for $30.00
Requires two disk drives.

Sample display:




## EASY RECORDS II

(Atari only)

EASY RECORDS II is an easy-to-use, yet powerful financial records keeping package for the Atari family of computers.

Up to 55 tracking files may be created (e.g., an expense track, receipt track, etc.). You are also provided with a "net-to-date" file of expenses and receipts, a separate depreciable item expense track, and several special function keys to retrieve the most often used information. For example, pressing the "=" key will bring up the year-to-date figures for expenses, receipts, and net.

You can also have a hard copy of all files on a monthly or yearly basis. For example, on the expense file report, the check number, date, amount, purpose, and payee will be reported.

Each data disk can hold 300 transactions (minimum), and data can be carried over from disk to disk; the amount of storage is unlimited.

EASY RECORDS II has been *carefully* designed to be "user friendly". It is menu driven and error trapped. The manual is clear (it even includes quizzes!). Also supplied is a training disk for learning the basics.

A common concern expressed by those new to computers is the difficulty in creating the initial records required to set up EASY RECORDS II for their particular business (since EASY RECORDS II is so flexible, you must define some of the functions, formats, etc.). The authors have responded by providing assistance in the form of data entry templates which greatly simplify computerizing your existing records.

To sum up, EASY RECORDS II is flexible, easy to learn, easy to use, and inexpensive.

Requires 48K, and one disk drive. Supports a printer (not required, but recommended).

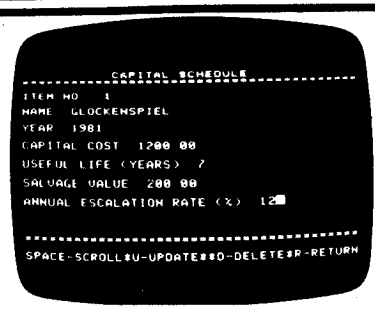
Price: $59.95 two Diskettes

## LIFE CYCLE ANALYSIS AND DEPRECIATION

(Apple diskette only)

This software package creates a data file of business expenses for equipment which can later be used to calculate and display a variety of reports. You may project annual costs, find the present worth, create depreciation schedules and justify tax deductions. The evaluation techniques conform to standards set by federal agencies. This is an invaluable package for any businessman who has invested in equipment. LIFE CYCLE ANALYSIS features an easy to use data file creation section and provides formatted hardcopy reports for use in presentations or for tax record keeping purposes. When used for generating tax information, this package is tax deductible! Requires 48K. Comes on two diskettes.

Price: $39.95 Diskette



## FINANCIAL MANAGEMENT SYSTEM

(North Star, CP/M, and IBM only)

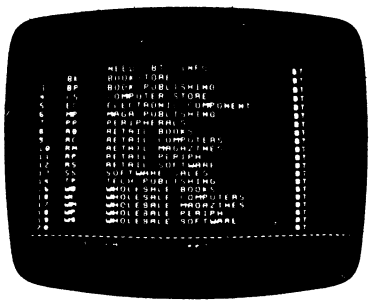
This is one of the most complete financial analysis packages available today. In addition, it is not simply a collection of programs, but rather a highly organized menu-driven set of coordinated subprograms which are a pleasure to use. Some of the topics covered are:

- Financial Ratios (liquidity, leverage, activity, profitability)
- DuPont Analysis
- Break-even Analysis
- Lease-Buy Decision
- Net Present Value
- Rates of Return (internal, modified, adjusted)
- Profitability Index
- Inventory Model (Economic Ordering Quantity Model)
- Capital Budgeting Under Uncertainty
- Refunding a Bond (value of a right, over subscription allocation, cumulative voting, stock dividends)
- Stock Valuation (perpetual bond, preferred stock, short term bond, common stock, rate of return, stock value)
- And more

Comes complete with a very well written and nicely organized instruction book (over 160 pages). Requires 48K. An 80 column printer is supported.

Price: $149.95 Diskette
$152.45 Disk

Sample display:



## TIMEMAP

(TRS-80 only)

TIMEMAP is a generalized hard-copy schedule generating program which may be used for a variety of purposes. Its main function is the generation of a printed bar-chart schedule, which may be used to graphically illustrate time-event relationships. Supporting functions of the program include a variety of printout formats, editing capabilities, data searching, and sorting of the data file. Typical uses for this program includes support of small engineering projects, illustration of various business activities and phases, illustration of production schedules, timing of component and equipment reliability testing, employee schedules, and so forth. Requires 48K and 80 or 132 wide printer.

Price: $29.95 Diskette

## CUSTOMER PROFILE

(TRS-80, CP/M, and IBM only)

CUSTOMER PROFILE provides an easy way to keep track of current and prospective customers according to business type, services or products provided the customer, and assigned sales representative or territory.

CUSTOMER PROFILE is extremely flexible and accommodates the unique ways business is conducted. For example, data files can be quickly sorted to present reports in a sequence appropriate to management requirements. Additionally, the system codes can be redefined to meet the special needs of any company.

CUSTOMER PROFILE uses a customer data file and three tables.

The customer data file contains:

Customer name and address
Customer telephone number
Sales contract
Customer status (customer or prospective customer)
Business type
Sales code (user defined)
Territory/representative assignment
Product/service
Date of the most recent sales call

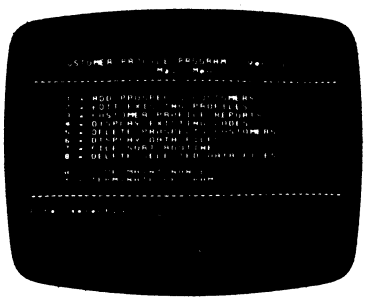
The tables are:

1. Business Type
2. Assignment
3. Products and Services

Comes complete with an exceptionally well prepared instruction book (50 pages).

Price: $59.95 Diskette

Sample display (TRS-80):



## FINANCIAL MANAGEMENT SYSTEM

See page 18 of Catalog Number 25. FMS is now available for CP/M and MSDOS (with Microsoft BASIC). This includes the IBM PC, CANON, Osborne, DEC RAINBOW (MSDOS + BASIC), and so on.

## MINI-LEDGER

(CP/M and IBM only — see below)

MINI-LEDGER is a single-entry accounting program developed for small businesses (less than 25 employees). Typically, owners of such businesses do not need, do not want, and cannot justify the time needed to learn the larger, integrated computer-accounting packages.

MINI-LEDGER was created to fill the gap between full accounting systems needed by larger companies and the often simplistinc personal finance programs.

Specifically, the program assumes the business writes its checks by hand and does not need the computer to print them. At the same time, the program assumes the business wants to provide its accountant with a clear picture of how its money was spent so the expense of preparing taxes and other financial reports will be minimized.

While maintaining the simplicity of menu-driven operation, MINI-LEDGER provides a powerful means of expense and income tracking by allowing 99 account and sub-categories. Several printouts (reports) are included which provide both the business owner and the accountant a clear picture of the company's financial operation.

Because MINI-LEDGER is menu-driven it is particularly easy to use. Almost all of its functions will be found in one of three menus:

The main menu:

WHICH DO YOU WANT TO DO?

1. Enter Expense and Income
2. Create or Change a Paycode File
3. Work from the Printout Menu
4. Balance or Print an Output File
5. Sort an Output or Paycode File
6. Delete or Rename a Monthly File
7. Exit to System

The Printout Menu

WHICH DO YOU WANT TO DO?

1. Print a Monthly File with Cumulative Totals
2. Print a Monthly File with Check Totals
3. Print a Summary of a File
4. Print a Yearly Summary
5. Print Payment Codes

The Output Menu

WHICH DO YOU WANT TO DO?

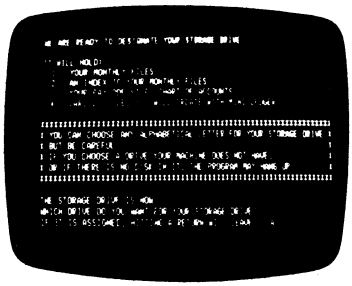
1. Balance a File Without Totals Lines
2. Balance with Totals for Main Codes
3. Balance with Totals for Sub Codes
4. Print an Output File

After choosing one of the menu options, you will be presented with clear and easy-to-understand choices. MINI-LEDGER is easy!

Available for IBM MSDOS (and compatibles), Osborne, KAYPRO and MORROW computers. Requires at least one disk drive and a 132-column printer.

Price: $149.95 Diskette

Sample display:



See the REVIEWS section for additional information.

## DECISION ANALYSIS

(CP/M and IBM only)

DECISION ANALYSIS will not make decisions for you, but it will help you better organize your choices and the factors involved, and, in turn, help you make ***better decisions.***

DECISION ANALYSIS sees to it that you define the choices and criteria clearly, and supply ratings. Then it analyzes your ratings to show how each choice compares with all the others. The analysis is presented in three tables of paired comparisons:

- Table of advantages: How much the choices outscore each other.
- Table of Disadvantages: How much the choices are outscored by each other.
- Table of Best Choices: Which choices are superior to the others.

What you do is simple. You enter your choices, criteria, and levels of confidence. There are several options, including the weighting system, confidence levels, date printing, saving, etc.

DECISION ANALYSIS may be used as both a tool and as a training aid. To the latter end, a clearly written manual has been prepared which takes you step-by-step through an analysis session and includes helpful commentary.

Requires at least 48K and one disk drive; a printer is supported, but optional. MBASIC release 5.2 or higher (BASIC-80) is needed.

Price: $39.95 Diskette
$42.45 8-inch CP/M Disk

## HAVE YOU EVER WONDERED...?

Why do some of the titles carried by DYNACOMP remind you of programs nationally advertised by other companies?

Answer #1: Many of DYNACOMP's products are distributed through other companies in the U.S. and Canada.

Answer #2: Quite a few publishers with excellent products have been defeated by very intense competition and high advertising expenses. DYNACOMP has acquired publishing rights to many of these products. It doesn't take too many ads at $10,000 per page per month to do a small company in.

Answer #3: DYNACOMP is actively seeking and reviewing software published by other companies. If we see a good product which we think is reasonably priced, we try to offer it in our catalog. About 4% of the offerings in the DYNACOMP catalog are in this category.

## BUDGET MODEL ANALYZER
(Atari and Commodore 64 only)

BUDGET MODEL ANALYZER (BMA) is a unique financial-planning tool designed to provide you with a clear and revealing picture of your overall cash flow situation. It is easy to use and ***does not require cumbersom record keeping,*** yet it can show you a great deal about your spending habits and spending capacity.

To use BMA you need only provide a list of all your various incomes and expenses. Each income and expense must be described as being per day, work day, week, 2 weeks, month, quarter, or year. BMA uses these period specifications to correctly weight each income expense. BMA provides you with a very convenient maintenance system for creating, saving, and altering your list (or lists).

BMA can then expand your list into a complete matrix that shows each item in your list, expressed in each of the various period specifications (day, work day, week, etc.). It shows you the result of all your incomes and expenses.

For those who do not fully appreciate numbers, BMA will produce a bar graph giving a graphic representation of your budget.

BMA allows you to compare expenses occurring in varying frequencies. Is your $5.00/work day lunch really worth $109/month when you consider what that amount could do for you if you applied it to a house or car payment?

Even more useful is the ability to see clearly the result of all your incomes and expenses. How much extra spending capacity do you have?

Cassette version requres 32K; diskette requires 48K.

Price: $29.95 Cassette
$33.95 Diskette

## LOAN ANALYSIS
(Atari only)

In today's marketplace with sky-high interest rates and several different lending facilities to chose from, it is important to have at your disposal every scrap of information possible in order to make the most intelligent decisions about borrowing. This program is written to aid you in making the best possible choice when it comes time to borrow and to arm you with the facts about interest rates, payment schedules, and amortization of loans. This program will provide you with those options before you sit down with your lending facility.

The program is divided into three parts. Each part is available by making a choice from the menu. The first part allows you to vary the amount of the loan, interest rates, and the life of the loan. The second part gives you the option of determining how much you might save if you pay a little on your loan each month. It will show you the differences in interest paid, amount of total payments, and equity created. The third part will amortize your loan and show you month-by-month how your repayment scheule works and why the cost of borrowing money is as great as it is. LOAN ANALYSIS is a small investment which can save you much.

Requires 16K (cassette), 24K (diskette).

Price: $17.95 cassette
$21.95 diskette

## PERSONAL BALANCE SHEET
(CP/M and IBM only)

PERSONAL BALANCE SHEET provides an easy way for you to create a statement of your financial position. Besides calculating your total assets (cash, accounts receivable, stocks, bonds, real property, etc.) and liabilities, PBS includes debt/worth, current, and acid test ratios. You can use PBS to forecast changes in your net worth based on changes in your investments and liabilities.

PBS is a well-designed, easy-to-use software package. It comes with a documentation package which offers step by step instructions, a sample data file, program notes and an annotated program listing (in BASIC). PBS outputs data to your normal (LPRINT) printer port. Requires an 80 column printer for detailed balance sheet output.

Price: $29.95 Diskette

## HANDICAPPER
(available for all computers)

HANDICAPPER is a handicapping scheme designed for thoroughbred races of lengths 6, 6 1/2, or 7 furlongs. It was designed by a mathematician and has been tested by professional bettors and handicappers. In general, you can expect HANDICAPPER to produce the winning horse about 40% of the time. However, in certain instances, it can be much more accurate.

The information required by the computer is:

1. The length of the race.
2. The length of the horse's previous race.
3. In some cases, the length of the next to last race for the horse.
4. The horse's position at points of call in the previous race.
5. The horse's position at points of call in the next to last race.
6. The type of race today.
7. The type of the previous race.
8. The horse's post position today (determined by his position in the RACING FORM).
9. The horse's post position in his previous race.
10. The number of first and second place finishes for the past two years.
11. The number of starts the past two years.

As you can see, this is the same information used by the professionals! The problem is, what if everyone used HANDICAPPER?

Requires 16K.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 Disk

## PERSONAL FINANCE SYSTEM

(available for all computers)

PFS was demonstrated on CBS network TV!

The PERSONAL FINANCE SYSTEM (PFS) offers the user one of the most complete financial management packages available, allowing the individual or small businessman complete flexibility in maintaining all aspects of financial record-keeping. Depending on configuration, you will be able to store from 300 to 2,000 transactions on each disk.

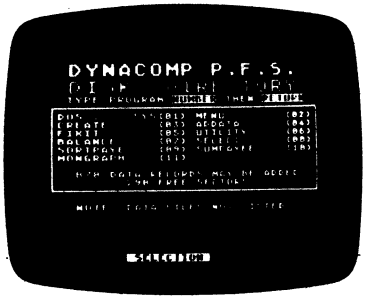
Records are easily entered into the master file and can be accessed by payee or by a user defined code (you may assign up to 26 different categories). PFS will keep track of all tax deductible items, bank deposits, monthly charges, cash payments, etc. It will even automatically deduct any check fees if desired. You will be able to get financial summaries for any category on a per item, monthly, or yearly basis. PFS will print the results in detail or summary form, access the printer if you have one, and even plot the results on a monthly bar graph!

PFS is available on diskette only. The Atari version includes DOS 2.0 on the diskette and utilizes that computer's sound, color, and graphics capabilities. The Atari version requires only 24K to operate; the North Star and other versions only 32K! Comes with an 11-page manual.

DYNACOMP is certain that you will find PFS to be one of your most valuable programs.

Requires 24K.

Price: $39.95 Diskette
$42.45 8" CP/M Disk




Sample display (Atari):

## SHOPPING LIST

(Atari, C-64, TRS-80 and IBM only)

With this program you can carefully plan your next trip to the supermarket day by day in advance. Each day you may enter the item to be purchased and its approximate price. When you are ready to go, SHOPPING LIST will print out an itemized list and the amount of money you need to take.

Requires 16K.

Price: $12.95 Cassette
$16.95 Diskette

Sample display (TRS-80):

## THE FAMILY BUDGET

(available for TRS-80, Apple and Atari only)

Welcome to the age of electronic record keeping. The Family Budget Program is designed as a two-part electronic home data record-keeping program. Part One, Budget, is used to record expenditures, both cash and credit, and income on a daily basis for the period of one calendar year. Three categories are used to record tax deductible items, namely Interest and Taxes, Medical expenses, and Charitable Donations. Part Two, Charge Accounts, provides a continuous record of all credit transactions. Each program provides options for hardcopy printout of various data. These printout options assume a printer is connected to Port #1 of the Apple.

As you receive it, FAMILY BUDGET is provided with 28 transaction categories:

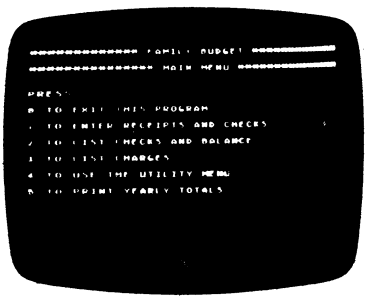
| | | |
|---|---|---|
| 1. Payments | 11. Insurance | 21. B & B |
| 2. Savings | 12. Gifts | 22. Cash |
| 3. Food | 13. Interest | 23. Charges |
| 4. Meals | 14. Medical | 24. Pay |
| 5. Rent | 15. Charity | 25. Add. Inc. |
| 6. Clothes | 16. Labor | 26. Fed. Tax |
| 7. Utilities | 17. Amusement | 27. State Tax |
| 8. Laundry | 18. Auto | 28. Soc. Sec. |
| 9. Travel | 19. Cigarettes (Ugh!) | |
| 10. Education | 20. Home Furn. | |

You may easily enter, edit, save and recall data, print out selected categories according to transaction period, and much more. FAMILY BUDGET comes with an excellent 17 page instruction manual. Be prepared for that IRS audit!

Requires 16K program memory (Atari version requires 24K).

Price: $34.95 Diskette

Sample display (Atari):


FAMILY BUDGET
MAIN MENU
PRESS:
0 TO EXIT THIS PROGRAM
1 TO ENTER RECEIPTS AND CHECKS
2 TO LIST CHECKS AND BALANCE
3 TO LIST CHARGES
4 TO USE THE UTILITY MENU
5 TO PRINT YEARLY TOTALS

## TAX OPTIMIZER

(available for all computers)

TAX OPTIMIZER is a software system designed to evaluate various tax alternatives and to select the most advantageous method for the preparation of an individual Federal Income Tax.

Using TAX OPTIMIZER, you can easily determine the advantages or disadvantages of your projected financial decisions and actions.

Each set of input data is referred to as a scenario. A tax scenario can contain up to five alternatives. Individual scenarios may be saved on disk for future reference. Stored scenarios may be retrieved, modified and recalculated at will. If a printer is available, permanent copies of the tax scenarios can be printed.

What TAX OPTIMIZER does in **internally** calculate your taxes according to the information supplied and the tax rules. Then the **total tax** for each scenario is printed out so that you may choose the best method (e.g. income averaging, married filing separately, etc.) This can be done for a sequence of years so that you may choose the scenario having the overall best tax advantage.

Also note that updating the tax tables can be easily accomplished by the user by typing in table values.

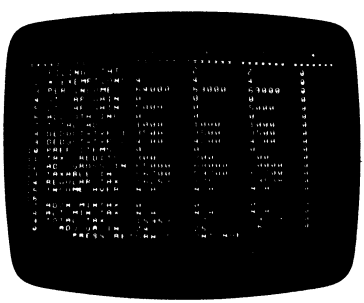
TAX OPTIMIZER is clearly worth more than its purchase price, and even that is deductible!

TAX OPTIMIZER comes complete with 14-page instruction manual.

It requires 16K of program memory (Atari version requires 24K).

Price: $59.95 Diskette
$62.45 on 8" CP/M Disk

Sample display (Osborne):



## PERSONAL FINANCE MANAGER

(Apple, CP/M, and IBM only)

PERSONAL FINANCE MANAGER (PFM) is designed to run under Microsoft BASIC (Release 5.2 or higher) using any CP/M operating system. PFM includes all of the features of DYNACOMP's popular PERSONAL FINANCE SYSTEM, and has several more for those individuals with more complicated and extensive financial records.

PFM requires two disk drives and can store approximately 3,600 records on a single double-density 5¼" diskette. Up to four savings accounts and four checking accounts can be simultaneously maintained, with the balance in each account automatically displayed when in the menu mode. There is also a "cash" account.

All transactions may be flagged for later sorting. The three standard codes are taxable/non-taxable, checking/savings/cash, and deposit/withdrawl. There are also 26 user-defined codes.

Each of the checking accounts can be balanced separately. PFM sorts through the chosen account to find entries that had not cleared the bank at the time of the previous balance, and then asks if they have now cleared. The record of any transaction that has not cleared can be dumped to a printer if desired. The balance routine also has an edit feature to allow for direct editing while balancing the account.

A separate edit routine also exists to allow the user to edit any records that are in the data file. An individual account can be keyed or all records can be viewed starting with the most recent, scanning forward or backward as desired. As an added convenience, it is possible to jump to a specific record number if desired.

A sort routine has been included to allow the user to sort for specific records by selecting among six sort parameters. This can be done in several different ways. After the sort has been completed, a list of all the records can be printed, along with a summary including a graphic display for the year.

The sorting/searching/merging available in PFM is *very* flexible. For example, you may sort alphabetically, or by check number, category, etc. When searching, you may use "and" or "or" tests between categories (for example, collect entries corresponding to checking account#1 AND which are taxable OR which are written to a particular person). You have to use this capability to really appreciate its power!

PERSONAL FINANCE MANAGER requires one disk drive and a machine having at least 48K. A printer (80 columns or wider) is supported, but not required.

Price: $49.95 Diskette
$52.45 Disk

## PERSONAL FINANCE SYSTEM UPGRADE

Notice: A new and faster sort has been added to the CP/M, Apple, TRS-80 and Commodore versions of PFS. This upgrade was made starting with January 1, 1984 shipments. Previous owners of PFS may upgrade to the faster version by returning their original disk(ette), well packed, and including a $5.00 upgrade fee (plus $2.00 shipping and handling fee). Do *not* return the documentation!

Price: $5.00 + $2.00 shipping/handling

## HAVE YOU EVER WONDERED...?

Why does DYNACOMP use un-retouched black-and-white computer-screen photographs instead of fancy four-color art work to "push" its products?

Open a computer magazine and just look at the art work. Do it as an experiment. — Nice copy, isn't it? However, how much of this art work actually conveys *real* information about the product? How much of it leads you to *expect* things (e.g. graphics beyond the machine's capability, a beautiful secretary, fantasy, etc.) that are not really in the products? DYNACOMP's advertisements and catalog descriptions are simple and factual. However, even we have trouble restraining our advertising department on some of our products!

## THE ODDSMAKER

(Apple, C-64, and IBM only)

THE ODDSMAKER is a parimutuel betting system for up to 14 betting pools in a single betting event. THE ODDSMAKER accepts bets, prints tickets, and calculates the odds and pay outs. A number of information screens can be displayed while bets are entered.

Information screens include the current odds, pay outs, and amount bet for each pool, and custom announcements. Information screens are instantly updated as each bet is entered.

Additional features include the provision for a "house cut", which is deducted before pay outs are calcualted.

All the betting information for a betting event can be saved on the disk and then restored at a later time. This feature allows THE ODDSMAKER to handle up to 14 different betting events simultaneously.

SPORTS: THE ODDSMAKER will liven up the action when friends are over to watch a sports event on TV! The "house cut" pays for the refreshments!

BUSINESS: THE ODDSMAKER will compute the odds for success when you enter mail order response statistics for different products!

OFFICE POOLS: THE ODDSMAKER will be the bookkeeper for your next office pool! If the event is the arrival of a new baby, the "house cut" pays for the shower gift.

EDUCATION: THE ODDSMAKER demonstrates how odds are calculated and how pay outs are figured in a parimutuel betting system!

**THE ODDSMAKER is designed for entertainment use only.**

Price: $39.95 Diskette

By the time you receive this catalog, several very nice reviews should have appeared in the magazines: *Popular Computing* (May, 1984), *Byte*, *A+ Magazine*, and *Softalk* (March, 1984).

See the review section for more information.

## THE CREDIT RATING BOOSTER

(TRS-80 and IBM only)

The next time you shop around for the best possible interest rates on a mortgage, an auto loan or any other type of credit, use THE CREDIT RATING BOOSTER to help stack the odds well in your favor.

Most credit applicants do not realize that there are several factors which can reduce their creditworthiness rating even if they know themselves to be 100% credit-worthy. Some of these factors are very simple and you should be aware of them in order to present an application which is as favorable as possible. These factors can mean the difference between getting low-priced credit at the most conservative institution in town or being forced to pay higher interest rates elsewhere.

THE CREDIT RATING BOOSTER was designed and written by a data processing consultant to major U.S. banks. It provides a well organized printout, or full screen displays of your up-to-date credit history in a way that is designed to suitably impress a loan officer.

THE CREDIT RATING BOOSTER is very user-friendly and easy to use. Before you apply for your next loan, be sure to have THE CREDIT RATING BOOSTER working for you.

Price: $19.95 Cassette
$23.95 Diskette

## THE LOAN ARRANGER

(Atari only)

THE LOAN ARRANGER is designed to help you keep track of up to 25 personal loans, such as a home mortgage, automobile, education, home improvement, and so on. The program will allow you to monitor the remaining balance of each loan, the number of payments left, and the date of the final payment. You can see and print reports on the current status of all your obligations, and on your year-to-date payments for each. You can also print complete or partial amortization tables for each of your loans. Another feature allows you to combine various terms (principal, interest rates and number of payments) to compare monthly payments and the total interest paid. THE LOAN ARRANGER can be very helpful for short- and long-term budget and tax planning (and is tax deductible!)

Requires 40K, 80 column printer, Atari 810 disk drive. Price: $19.95 Diskette

## HOME INSURANCE PROTECTOR

(TRS-80 and IBM only)

There are six main reasons why people settle for too little on their home contents insurance claims. It is not unusual for someone to sign an agreement to receive settlement of a claim for $5,000, only to realize weeks later that they should really have asked for $7,000 in order to fully pay for the cost of replacing their lost or damaged items. HOME INSURANCE PROTECTOR safeguards you against the six common pitfalls that can lead to such an unfortunate situation.

HOME INSURANCE PROTECTOR keeps an up to date, easy to maintain inventory of your personal possessions. You can upgrade the value of the entire inventory to reflect inflation, or quickly adjust the values of single items. You can "page" through your inventory examining 11 items per full screen, display dollar totals and print an insurance company report or an owner's full report for safe storage.

HOME INSURANCE PROTECTOR is one of the most user-friendly programs available today. It has extensive error-trapping, full screen menus, multi-data file capability, an on-line "Help" screen, and it prompts you for important evaluation information where necessary. Requires 32K. Printer optional.

Price: $19.95 Diskette

## LAZY WRITER
(TRS-80 only)

If you have a serious use for a word processor, LAZY WRITER is for you. It will allow you to enter text right away, make corrections easily, store what you've written on disk, and print out with complete control over margins and appearance. Best of all, LAZY WRITER is easy to learn and use. All kinds of people, from students to busy professionals, are using it now.

LAZY WRITER has two modes of operation: Text Entry and Editing. In Text Entry, you enter new material. When you switch to Edit (by simply pressing "BREAK"), you do not need to press control keys. Most editing functions are carried out with only one keystroke, and are easy to remember ("d" for deleting, for example). Scrolling the text is very easy. In addition to moving the cursor with the arrows, you can print the next "screen" of text, add a line at the top or bottom, go to top of text or bottom of text. You can also move parts of your text with the "Find" function, by typing in a chapter name, for example; this works forward or backward. Once you have entered and edited your text, a simple command loads the printer module and you're ready to print.

Editing Functions:
- Easy, logical one-key editing
- Overtyping to quickly fix typos
- Unlimited insert/delete; easy undo
- Find word/phrase; optional or global replace
- Block move/copy/delete; multiple blocks
- Set tabs for typing in columns
- Semi-auto hyphens; see text in any width
- Store often-used commands on number keys
- Mark cursor positions for easy return
- See page breaks before you print
- On-screen HELP file lists all commands

Printing Functions:
- Underlining, bold, and auto double-wide
- Indents and auto reverse indents
- Center text and/or titles
- Print on any size paper or labels
- Double (or triple, etc.) space text
- Multiple-line headers or footers
- Automatic page numbering; automatic justification
- Chain files together for continuous printing
- Send codes to any printer, anywhere in text

Also, LAZY WRITER comes with a RS 232 communications package. This is not a full terminal package, but it lets you use your modem to send or receive text over your phone lines. With LAZY WRITER, you can receive and save data from a mainframe computer or a service like *The Source* or *Compuserve*. This data can be appended to an existing file or become a new file. Send your text by modem to a colleague or typesetting service without leaving your desk. Writers and researchers will find this feature a big plus.

LAZY WRITER comes with a unique "Utility" package of extension programs. You may never need them, or you may find them indispensable. RESCUE recovers "lost" files from the computer's memory. SIZE lets you control where memory begins. STRIP removes "soft" hyphens, underlining, block-move markers, and control characters from your text.

Another extension, PRINTGEN, makes it easy to customize LAZY WRITER for a particular printer. By telling LAZY WRITER what your printer requires, you can use special modes of your printer, such as double-wide type, or bold face, easily and automatically.

CHANGELW lets you alter many of the default values in LAZY WRITER. These include changing cursor size and speed, as well as printer defaults, such as page length and width. You can also set permanent tab settings, choose whether to have text print on the screen as it is loading, or load in a bit faster without the print to screen.

FORMATTER is an integral part of LAZY WRITER. It lets you see line breaks before printing your text. This is very useful in controlling final appearance of long documents. FORMATTER also provides a word count, semi-automatic hyphenation, and an Index Maker. The Index Maker gives you back a list of words you marked in text, with their page numbers.

The LAZY WRITER manual has over 100 pages and is written in plain English, not computerese. It does not assume you are an expert word processor operator; it helps you become one. The manual has a table of contents, index, and Reference Card.

To use LAZY WRITER, you need 32K of memory, at least one disk drive, and a printer. LAZY WRITER is sold on a mini-version of MULTIDOS, a fine Disk Operating System (DOS), so it is ready to use. It may also be used on any other TRS-80 DOS.

LAZY WRITER works with TRS-80 Model I, III, and IV. The Model IV version has an 80 x 24 character screen.

LAZY WRITER can be used with the LNW-80, the Phoenix, and the PMC-80.

Here are some of the comments from the reviewers:

George Bond (*Creative Computing*, March 1981)
*... The best thing about Lazy Writer, from the viewpoint of a professional writer and editor, is not that it does exotic things, undreamt of by users of Electric Pencil and Scripsit. It is that it does the same things in a much simpler way. ... All the functions of Lazy Writer are covered well in its documentation, which ranks among the best I have seen. It is on a par with the construction manuals for Heathkits and Dynakits.*

T. A. Dameliuk (*Infoworld*)
... Lazy Writer ... is an advanced, feature-packed product designed to meet the word processing needs of even the most demanding user.

Mr. Daneliuk gave LAZYWRITER top grades on its rating scorecard.

In other words, LAZY WRITER is pretty good!

Price: $159.95 Diskette plus Manual
State your computer (I, III, or IV) when ordering.

## TEXT MASTER
(Apple 32K, diskette only)

TEXT MASTER is a general-purpose text editor for the Apple II computer. It features powerful English-oriented commands which permit the complete manipulation of textual information. The information treated may be correspondence, computer programs, data to be used by other programs, and more. TEXT MASTER also interfaces with any printer connected to your Apple. The minimum system requirements are 32K of RAM, Applesoft on ROM, and at least one DOS 3.3 disk system. TEXT MASTER can process any length file segment by segment. Thus it is possible to process files as large as a diskette. Comes complete with an efficient 16-page manual. TEXT MASTER is equivalent in capability to many word processing systems costing many times as much.

The commands available in TEXT MASTER are:

| | | | |
|---|---|---|---|
| COLLECT | USE | EXECUTE | NONUM |
| INSERT | MERGE | STOP | RENUM |
| DELETE | SAVE | COPY | FREE |
| REPLACE | WAIT | MOVE | LENGTH |
| LIST | RESAVE | CLEAR | AUTO |
| RETRY | APPEND | SET | MANUAL |
| CHANGE | SCRATCH | SHOW | CATALOG |
| MODIFY | COMPARE | NUM | DISPLAY |
| HELP | | | |

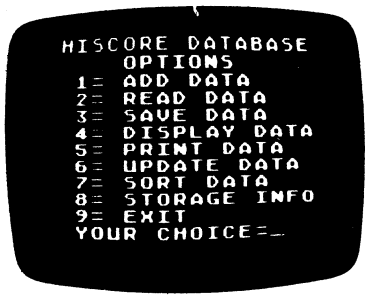
Price: $29.95 Diskette

## HISCORE DATABASE
(Atari only)

HSD is designed to maintain the game score records for you and your friends. You may display, print (to a printer), update, sort (fast!) and generally maintain game scores. An excellent present for that avid game player! Requires 16K (cassette), 24K (diskette). A 40K disk system can store over 400 records.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:




## HINT

Check our supplies section for
GREAT
prices on name-brand diskettes!

## MAIL MASTER
(Atari diskette only)

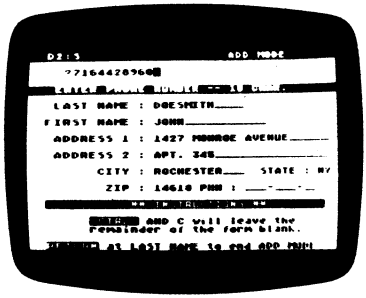
MAIL MASTER is a general purpose mailing list and telephone number utility program. It provides a wide variety of ways in which data can be stored and retrieved. Novice users can quickly and easily learn to operate MAIL MASTER thanks to the clearly written on-screen prompts which are provided and the clear layout of information on the screen. MAIL MASTER is largely written in BASIC so that it may be customized by the sophisticated computerist. However, it also employs fast machine language routines in time-sensitive areas, such as sorting.

MAIL MASTER provides eight labelled fields for each mail list entry. They are: LAST NAME, FIRST NAME, ADDRESS 1, ADDRESS 2, CITY, STATE, ZIP and PHONE NUMBER. ADDRESS 2 may be left blank, or optionally used to store information (what was purchased, etc.) which can (optionally) be printed out.

The file functions available are sorting by name or zip code; printing mail labels 1, 2 or 3-up; build, search and edit. These features combine to make MAIL MASTER a versatile mini-data management program unmatched in power and ease of use.

Price: $39.95 Diskette

Sample display:


D2:5
ADD MODE
LAST NAME : DOESMITH
FIRST NAME : JOHN
ADDRESS 1 : 1427 MONROE AVENUE
ADDRESS 2 : APT. 34B
CITY : ROCHESTER STATE : NY
ZIP : 14618 PHN :
AND C will leave the
remainder of the form blank.

## GOLFER'S DATABASE
(Atari only)

If you play golf or plan to, GOLFER'S DATABASE is for you. Designed by an engineer with a two handicap, this very easy-to-use program (comes with a 20 page manual that's rarely needed) is designed to keep track of your golf scores, number of putts, greens hit, courses played, course ratings, course and weather conditions plus other important scoring statistics.

As a data base you will be able to add, edit, delete, search and sort your records as desired. A specialized data file is generated by the data base which is used to analyze various types of handicaps, stroke averages and scoring characteristics.

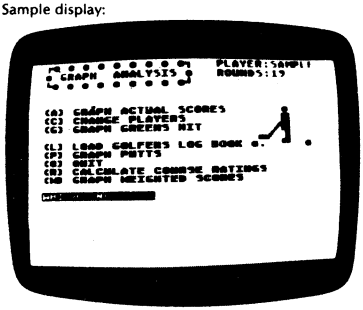
All members of your family and/or golf league can have separate data files, each of which can be reviewed and analyzed individually. If you have a printer, all data records and analyzed output can be printed. Included in the data base is a graphing program which will plot and graph all your scoring characteristics.

The GOLFER'S DATABASE will help you improve your golf game by allowing you to easily organize and analyze your own personal scoring characteristics, thereby allowing you to better utilize your practice time.

Requires 32K.

Price: $29.95 Diskette

Sample display:



## DISKETTE INVENTORY SYSTEM
(Atari Only)

DISKETTE INVENTORY SYSTEM provides a convenient, easy-to-use and painless method for you to determine the location of single or multiple copies of programs or data files in a diskette collection. Each Master Directory Diskette keeps track of all programs and data files stored on as many as fifty diskettes.

Once a Master Directory has been created by logging each diskette in your library, the system can provide an alphabetized index of all programs and data files, the location of specific programs or files, and the contents of specific diskettes. In addition, the system can be used to print disk-jacket inventory covers which may be affixed directly to a disk jacket. These covers provide an additional means to manage and use diskette libraries.

All programs in the DISKETTE INVENTORY SYSTEM are interactive. Full instructions and option lists are displayed.

System Requirements: 1 disk drive, 24K of memory, BASIC language cartridge and printer (optional).

Price: $21.95 Diskette

## DATA RETRIEVAL SYSTEM (DRS)
(CP/M and Atari only)

DATA RETRIEVAL SYSTEM (DRS) is a fast cross-indexing system which may be used to store and retrieve information according to key words. Although DRS was originally set up to index journal articles, it can be used equally well to cross-index record collections, recipe files, etc.

In the CP/M version you can conditionally search (e.g., BYTE, 1984, CRYPTOGRAPHY) by up to 4 key words. You can assign your conditional key-word search to any combination of fields (columns). The result of your search can be sent to the printer or screen. Also, you may include numeric data fields and conditionally sum them (e.g., a mini-expense system). In addition, you can establish an ALERT flagging system which prints a message when certain conditions are met (e.g., you have made more than three payments to a particular person in 1984). The CP/M version of DRS is *more* than a system to index journal articles; it is a versatile and flexible data management system.

The Atari version is set up more as a traditional indexing system. You can search on key words in the title (key words can be appended to the title). However, the length of the article description is unlimited.

Both the CP/M (MBASIC release 5.2 or higher; BASIC-80) and Atari versions are user-friendly and come with complete manuals. The Atari version requires 32K. The CP/M version requires 48K. Both require at least one disk drive. A printer is optional.

Price: $29.95 Diskette (Atari version)
$39.95 Diskette (CP/M version)
$42.45 8-inch CP/M Disk

Not available for IBM PC.

## DYNABASE DATABASE PROGRAM
(TRS-80, CP/M, and IBM only)

The DYNABASE DATABASE PROGRAM (DDP) is an easy-to-use database package which may be configured by the user. The program utilizes sequential access techniques to eliminate the requirements of setting limits on the size of any field, and to make the most efficient use of available disk space. The program functions have been structured around the file access method to provide the least amount of delay.

In operation, file size is limited only by available disk space, and there are no artificial restrictions on the length of text the user may enter into any field of a record. DDP may be configured to contain up to 10 text fields plus up to 10 numeric fields. Each field is labelled by the user.

A wide range of options is provided for printing out the database during the print, sort, search, and evaluation operations. Eleven "canned" printout formats are provided, along with a custom printout set-up option. The custom printout function allows the user to set up a customized printout format utilizing up to 255 columns. The set-up procedure also supports control code sequences to select printer density, font, etc. Once established a printout configuration may be saved to disk for future use as a printout configuration source. Printout routines include page control, page numbering, dating, source file name, and user heading.

The sort command allows the user to sort the data file according to any text or numeric field. The sort may be written to a target file, or may be used for print out.

The search command provides a wide variety of options for searching the data file. Results of the search may be sent to a target file, or the search may be printed out. The user can set up the "match" conditions (3 text, 2 numeric), or may select a range search. Any number of fields may be selected for searching, and up to 10 keywords may be entered for matching. Both the text and numeric fields are searchable.

A file evaluation command provides a math capability for the numeric fields of a file. Addition, subtraction, multiplication, and division are supported. (Beginning to sound like Visicale®?) The user may operate on and store the results in any of the numeric fields of the file. A constant may be substituted for one of the operands, and an option to totalize all the resultants of the file is also provided. The standard add, subtract, multiply and divide functions are provided, along with the trigonometric, logorithmic and exponential operators. DDP also permits bargraphs to be printed, as well as mailing labels (e.g., 1-up).

DDP is user-friendly. All input data is requested by name, and data verification is required before the data is written to disk. The program is written to reject out-of-range or nonsense inputs, and error-trapping is provided to prevent data loss due to system errors. Easy to use editing features are also provided.

Price: $49.95 Diskette

## HINT
(CP/M, TRS-80 diskettes)

You are in BASIC and try to load a file and get a DIRECT STATEMENT IN FILE error. Are you trying to load a data file by mistake?

## DATA*AID
(Atari only)

With DATA*AID you store, organize, reorganize and retrieve information of your choice in a form which is useful and meaningful to you. All this is accomplished without using "computerese-type" prompts; you do not need to know programming to use DATA*AID. All you need is a collection of data (information) on a given subject you wish to store and recall. Use it for:

Household goods inventory
Stereo tapes or records catalog
Bowling scores
Stamp or coin collections
Little League statistics
Recipe locator
Address book
Birthday/anniversary book
Expense records
Gift list (size, style, color preferences)
Anything you want

Comes on two diskettes. Requires 48K, one disk drive. Printer optional.

Price: $39.95 (two Diskettes)

## A CALL FOR AUTHORS

SOFTWARE ACQUISITION

Over the past two years DYNACOMP has been adding from ten to fifteen new titles to its product line each month. Also, during the same period, DYNACOMP has averaged about twice as many *conversions*. This pace has increased more recently and our 1984 plans are to *triple* the new-addition rate.

DYNACOMP gets its software from a variety of sources:

1. In-house development
2. Acquisition of titles from other companies which:
   a) Have ceased active operations.
   b) Wish to have another marketing channel.
3. Outside authors.

This message is directed to the potential DYNACOMP author.

CRITERIA

If you are the author of a good piece of software in any of the subject areas covered in the DYNACOMP catalog, you should consider DYNACOMP as a possible publisher for your work. Our criteria for acceptance are:

1. Marketability. Is this a product which provides a useful function (solves problems, is entertaining, etc.
2. "User-friendliness". Is the program carefully thought out, error-trapped, and easy-to-operate?
3. Documentation. Does the instruction manual provide step-by-step instructions, include background information, examples, sample sessions, etc.?

REVIEW PRIORITIES

Quite frankly, the *first* thing the DYNACOMP reviewer will look at is the associated manual. From that will be formed an impression of how well documented the software is. Next the reviewer will operate the program and form an impression with respect to the "user-friendly" characteristics.

REVIEW PROCEDURE

The usual review procedure is simple. The author submits the software package for review and DYNACOMP reviews it, usually within two weeks. There are three possible review outcomes:

1. Acceptance. You will receive signed royalty agreements and a letter indicating any required changes or additional materials.
2. A statement of interest and suggested modifications to make the package acceptable.
3. A response indicating no interest.

ROYALTIES

Our compensation policy is simple. We pay a 10–20% royalty on the gross sales, and pay this *monthly* (not quarterly or semi-annually as do other companies).

MARKETING APPROACH

In the past DYNACOMP has depended on magazines for its main advertising thrust. However, the proliferation of magazines has made this approach much less effective than earlier in the business. This change, coupled with a mailing list which exceeds the circulation lists of most magazines (The first printing of our 112-page Catalog No. 25 was over 180,000 copies!) has resulted in a new marketing emphasis—direct mail. It is estimated that over 300,000 people will have read Catalog No. 25. Therefore our marketing is two-fold: magazine ads to generate interest in the catalog and large mailings of catalogs.

DISTRIBUTION

DYNACOMP's distribution is world-wide:

- DYNACOMP has over 3,500 dealers in its active mailing list, and over 500 dealer accounts around the world.
- DYNACOMPsoftware is manufactured both in the United States and Canada.
- DYNACOMP software is being translated and marketed in French-speaking countries.
- DYNACOMP software is sold through *other* catalogs (for example, COMPUTRONICS, K-12 Micro Media, A. W. Peller, and many others).

HOW MANY CAN WE SELL?

The question every author has on his or her mind is "How many of my packages do you expect to sell?" Our answer is simple and honest: we don't know! The software market is unpredictable and strewn with inflated figures and broken promises. Some programs which we think are great do not ever take hold. Some require a year of exposure. Some become hot sellers almost instantly. After more than five years in the business, what we have learned is to not be cocky and to just do a good job in presenting software products with clear and detailed descriptions.

According to a recent survey, DYNACOMP is in the top 10% with respect to software publishing company sales, so we must be doing something right. We will try to do right by you, too. It is in both of our interests to sell your product.

For further information, contact Ms. B. Rivers, Marketing.

# DATABASE MANAGEMENT

## HOME INSURANCE INVENTORY
(TRS-80, CP/M, and IBM only)

THE HOME INSURANCE INVENTORY is an easy-to-use inventory program which is specially designed for valuable collections and household inventory records. All program commands are in the form of menu selections, making program operation very easy. Additionally, all user data entries are prompted by name. Full editing capability is provided, as well as commands to search and sort the file. Two printout formats are provided, and output may be sent to the printer as well as the CRT screen. Additional commands provide for generating a total valuation of the file, and for automatic updating of the quantity and value of each entry, making record maintainence simple.

Price: $29.95

The TRS-80 version requires one drive, 48K. The CP/M version requires two disk drives (double density) and 64K of RAM.

## COLLECTORS PARADISE
(TRS-80, CP/M, and IBM only)

Three collectors inventory programs in one:

- Coin collection
- Stamp collection
- Rare collectibles

Keeps a complete inventory of all of your valuable collections. Quickly adjusts the current value of items to keep your insurance and personal records up to date. You can add, delete or change items as you page through your inventory looking at 11 items per full screen.

COLLECTORS PARADISE is very user-friendly and easy to use. It provides you with the total dollar value and price paid for each collection, plus the percentage appreciation in value. Optional printed report gives full details of all items for safe storage, plus the total dollar value of your collections. Requires 32K. Printer optional.

Price: $19.95 Diskette

## BOWLER'S DATABASE
(Atari only)

BOWLER'S DATABASE is a very friendly, easy-to-use program for keeping track of your bowling scores throughout the season. You can create files for each bowler of your family or each member of your league. A file can hold scores for 99 (or more) weeks. Summary and detailed reports are automatically displayed on your TV screen or printer. These reports contain your highest, lowest and average scores bowled in the first, second and third games. They also show your highest, lowest and average three-game series and your overall game average. The detailed report lists all your game and individual series totals by week.

BOWLER'S DATABASE gives you permanent, detailed records of your bowling performance. It makes comparisons from one season to the next, or from one league to another a simple task.

Requires 16K (cassette), 24K (diskette). Printer optional.

Price: $12.95 Cassette
$16.95 Diskette

## DESKTOP BIBLIOGRAPHY
(TRS-80 only)

DESKTOP BIBLIOGRAPHY is designed to allow the user to easily and efficiently construct a bibliographic reference system. For example, engineers, managers, executives, professionals and similar people might use DESKTOP BIBLIOGRAPHY to create a reference file of magazine articles. Writers might use DESKTOP BIBLIOGRAPHY during the research phase of a book to create an index of their work by inserting entries for each page or section. The search and sort commands provide a variety of useful, flexible, fast and powerful methods of accessing this data. For example, keyword searches may be made by category or globally, and they are *fast!* Reference size is limited only by available disk space. Editing is very convenient.

This program is designed for a TRS-80 Model I or Model III disk system with either 32K or 48K of RAM. When run, the program will automatically configure itself to the available memory. A printer is supported.

Price: $19.95 Diskette

## PHONE DIRECTORY
(Atari only)

The PHONE DIRECTORY is an electronic phonebook that can store over 300 names on a single diskette. It is indexed by last name for split-second (machine language) searching, no matter how many names you have stored. It includes an AUTO DIAL option that will dial through a Hayes Smartmodem. It can make spare phonebooks on a printer and can be used as a mailing list and print mailing labels. Color-coded menus and display screens are employed to make the program user-friendly.

Requires 48K, one disk drive, and a printer (optional).

Price: $29.95 Diskette

## SPELL
(CP/M and IBM only)

SPELL is just the thing to check your documents for accurate spelling, and it's carefully crafted to fit your machine and your budget. SPELL detects misspelled words in documents created by most word processors, including PIE, WordStar, SpellBinder, and Magic Wand. SPELL's flexibility lets you simply list unknown words, mark them in your document for easy editing, or add them to your dictionary. Sophisticated algorithms and a prefix/suffix table compress an effective dictionary of over 50,000 words into fewer than 31K bytes of disk space, far fewer than other spelling programs occupy. SPELL has a fast in-memory lookup process: over 4,000 words per minute (4 MHz Z80). Detects 99.8% of the misspellings while minimizing false reports of correctly spelled words. You can add new words and prefix/suffixes, even customize for British spellings.

SPELL has been reviewed in *Interface Age* (August 1982), *Microcomputing* (July 1982), and *Portable Companion* (June 1983).

Requires 48K of RAM.

Price: $49.95 Diskette
$52.45 8-inch CP/M Disk

Written by Software Toolworks

## COINDATA AND STAMPDATA
(IBM only)

COINDATA (CDA) and STAMPDATA (SDA) are high-speed compiled BASIC (source included) programs which use random-access files to compactly store and quickly retrieve stamp and coin collection information. Both programs are easy to use, self-prompting, and well error-trapped.

With these programs you may record the various characteristics which describe your collections, search for coins and stamps having particular characteristics, compute totals (e.g., for tax purposes), and print in several formats. Up to 300 coin records can be cataloged on a single-sided disk (800 on a double-sided diskette). If you are using a dual-drive system, the collection size is unlimited; the program will prompt for new data diskettes in drive B as the need arises.

The characteristics included are:

| COINDATA | STAMPDATA |
|---|---|
| File No. and Date entered | File No. and Date entered |
| Category & Denomination | Country |
| State or Sub-category | Category |
| Comments | Year |
| Mint Mark Location | Perforation |
| Design (Issue Description) | Watermark |
| Year and Mint | Printing Method |
| Quantity Minted | Scott Catalog No. |
| Variation | Scott Illustration |
| Condition | Comments |
| Date Acquired | Denomination |
| Quantity acquired | Color |
| Price | Condition |
| Date sold | Date purchased |
| Quantity sold | Quantity purchased |
| Price | Price |
| Dealer price | Date sold |
| | Quantity sold |
| | Price |
| | Dealer price |

The print and search options include:

- Print a selected listing
- Print a range of listings
- Print a catalog investment status including results of trading. The financial results are summed for tax purposes as regular or capital gains income and include estimated market value.
- Search/print entries according to a particular characteristic.

Data entry is simple and easy, and editing and correction are convenient. If you have more than a few hundred coins or stamps in your collection, COINDATA and STAMPDATA will easily save you their costs in time saved. Also, if you use these programs for tax purposes, their costs are deductible!

Price: $39.95 COINDATA
$39.95 STAMPDATA
$69.95 Collection (both programs)

Note: Collections may not be included in the 10%/20% quantity discounts.

## MYCALC™
(CP/M and IBM only)

MYCALC™ is an easy to use calculating tool which can compute your budget, record and project your investment returns, and even do your taxes. MYCALC™ provides all the important capabilities of a two-dimensional "What if?" calculator program, including: formulas, labels, variable column width, logical operations, references across multiple spreadsheets, sort, and print to line printer or disk file. Yet MYCALC™ is uniquely easy to use, and configurable to your terminal's function keys to provide a true full-screen editor "feel" for work-sheet manipulations. Simple keystroke commands allow operations on entire rows or columns to conveniently rearrange your data, or quickly build or revise templates and models. Display formats include scientific, financial, and bar graph. The PC/PCjr version can be used in either 40 or 80-column mode. The manual includes step-by-step "hands-on" tutorial making it easy to get started. The command line menu presents your options, and 23 on-line help screens keep you going. MYCALC comes with many useful templates, including a set to automatically compute your full IRS Form 1040 and itemized deduction Schedule A.

This program has been reviewed under its earlier-version name, ZenCalc, in *Infoworld*, October 4, 1982, and in *Sextant*, in the Winter 1983 issue.

Requires 64K and an 80-column screen.

Price: $59.95 Diskette
$62.45 8-inch CP/M Disk

## BEST OF WOK TALK
(CP/M and IBM only)

Exotic Chinese cooking is made easier than ever with this unique combination of technology and culinary expertise. The editors of *Wok Talk*, popular Chinese culinary newsletter, have assembled over 100 recipes from all regions of China, and organized them for your personal computer on two 5" diskettes or one 8" disk by the COMPUTER CHEF database (included). Easy to use software tells you how to proceed, step by step. You select recipes by ingredients, type of cuisine, or key words and WOK TALK automatically scales ingredient quantities to fit amounts on hand or portions needed. List recipies on your printer as needed; eliminates dripping on your cookbook, too! Expand your on-line recipe file by adding recipes using any word processor. This package includes a 22-page Chinese cooking primer, to help the novice get started, and many challenging recipes for the advanced chef. Here's a new adventure in computer application and eating enjoyment.

Requires 80-column display and 48K of RAM.

Price: $29.95 Diskette
$32.45 Disk

Written by Software Toolworks

## COMPUTER CHEF™
(CP/M and IBM only)

Now your personal computer becomes a kitchen assistant with COMPUTER CHEF, a versatile home data base that makes page flipping and portion figuring a thing of the past. Tell it the ingredients on hand, and COMPUTER CHEF will quickly suggest recipes using them. Saves you money by finding recipes for this week's supermarket bargains. When you need more servings, or have less of an ingredient than is called for, COMPUTER CHEF automatically scales the recipe to fit your individual needs. Prints recipes on your printer, so you never again need to worry about dripping on your cookbook! Contains over 70 kitchen-tested recipes from salad to desert, plus make even more use of all these capabilities by entering your own recipes too. By Marietta & Jim Gilogly, Pamela Chavez, and Michele Schumow.

Reviewed in *Infoworld* (October 11, 1982), *Portable Companion* (September 1983), and *Pro-Files* (Volume 1, Issue 1). Written by Software Toolworks

Requires 80-column display and 48K.
CP/M version 2.0 or higher is required (e.g. for Kaypro, Osborne, etc.)

Price: $29.95 Diskette
$32.45 Disk

## STATISTICS

DYNACOMP is one of the few large microcomputer software companies which is committed to the development of a broad line of statistics and engineering software. Our objective is to provide high quality and useful products at very reasonable prices. Our success in this is attested to by our many repeat customers.

Although the majority of our scientific software has been developed in-house, we do publish the work of outside authors. If you have a good program which you believe to be of use to other professionals, please consider DYNACOMP as a potential publisher.

### STATSORT
(TRS-80 only)

STATSORT is a very versatile program. Among the applications: creating an index for a book, printing exam results with statistical analyses, maintaining files for collections of stamps, books, records, and tapes. STATSORT also interfaces well with other programs. STATSORT can share files with word processing programs as well as the Radio Shack statistics package. By itself, STATSORT can create, edit, sort, and merge files and perform statistical analyses on numeric fields. All-in-all a generally useful program.

Requires 16K.

Price: $39.95 Cassette
$43.95 Diskette

Sample display:

### REGRESSION I
(available for all computers)

REGRESSION I is a complete and coordinated regression curve fitting package for the analysis of linear and non-linear, one-dimensional data. It is based on various subroutines and techniques presented in Volumes 1 and 2 of BASIC Scientific Subroutines (by F. Ruckdeschel). REGRESSION I provides many of the facilities available on large FORTRAN-speaking machines and more. However, unlike many of the FORTRAN equivalents, there is no confusion as to the input/output variable formats, and the software is very easy to use. In addition, the analysis is interactive, thereby permitting the user considerable freedom in experimenting with fitting functions and orders of approximation. Also, a special algorithm is employed to determine the coefficients which has round-off error properties much superior to the matrix algorithms commonly used. This greatly reduces the need to perform the calculations in double precision or pre-process the data.

The features of REGRESSION I include:

1. Easy data entry and editing.
2. Automatic data sorting and plotting (of both the data and fitted curves).
3. Fast and accurate regression.
4. A choice of many fitting functions, including forms supplied by the user.
5. Analysis of the standard error of the derived coefficients and the correlation coefficient.
6. Data storage and retrieval.
7. Plot of residuals.

Once the regression has been performed, the user may immediately repeat the analysis using the same data set (with editing if desired) and test other functional forms.

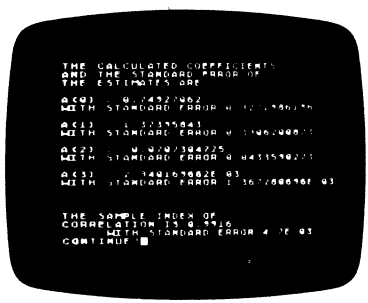
REGRESSION I is not only a powerful statistical tool for use in the engineering, business and social sciences, it is educational as well. Because the program presents the regressed coefficients as well as their estimated error bounds, the student may learn by experience how much credence to place on the derived coefficients. In addition, he/she may also get a feel for the general types of fit associated with various levels of correlation. It is very easy for the inexperienced experimenter to be tricked by regression results, especially those having high $R^2$ values. REGRESSION I is designed to guard against this.

Accompanying REGRESSION I is a well-written 12 page users manual.

Requires 16K of program memory (Atari version requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample display (Atari):



## REGRESSION II (PARAFIT)

(available for all computers)

PARAFIT is a parametric least squares regression program designed specifically for the determination of the non-linear coefficients in complicated mathematical expressions. This is to be contrasted with the linear polynomial coefficients calculated by REGRESSION I.

A typical problem suited for analysis by PARAFIT might be the following. Information has been collected on the failure rate of a particular product. This information is in the form of the normalized fraction of items which failed per unit time interval after production. The times at which these data were collected may not be equally spaced such that the set consists of many (fi, ti) pairs. The functional form assumed is the Weibull distribution.

$$f(t) = \left[\frac{vt^{(v-1)}}{u^v}\right] \exp\left[-(t/u)^v\right]$$

Given the fi, ti) data pairs, what are the least squares regression values for the parameters u and v?

PARAFIT may be used to solve this problem. The user inserts the functional form as a BASIC program statement and runs PARAFIT. The program employs a special form of modified steepest descent to interactively determine the unknown parameters.

Features included in PARAFIT are automatic plotting of the data fitted function and residuals; cassette (or diskette) data saving and loading; and data file building/editing.

PARAFIT was designed to be easy to use as well as effective, and is an excellent companion to REGRESSION I. PARAFIT is supplied with a comprehensive 14 page manual which fully describes the program's use.

Requires 16K of program memory (Atari version requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

## MULTILINEAR REGRESSION

(available for all computers)

This is the third program in the DYNACOMP statistics series. Whereas REGRESSION I and REGRESSION II (PARAFIT) are designed for analyzing bivariate data, MLR is capable of treating multi-variate situations with no limit (other than available computer memory) on the number of dimensions. The general form of the equation fitted will be $Y = af_1(X_1) + bf_2(X_2) + cf_3(X_3) + \text{etc.}$ The variables are the $X_i$. The regressed coefficients are a, b, c, etc. The functional forms, $f_i(X_i)$, may be virtually anything. MLR automatically offers a choice of nine mathematical forms, including the logarithm and exponential, as well as the simple default $f_i(X_i) = X_i$. In addition, the user may replace the default form with his own function. These choices can be independently made for each dimension.

The data input to MLR may be either from the keyboard or from cassette/disk files. Data may be loaded, saved, added to, deleted, and generally edited using the convenient data manipulation procedures provided. The number of data points is limited only by the computer memory available.

The outputs from MLR are the regression coefficients and the standard error associated with these coefficients. Such error estimates are very useful, but often neglected by regression programs. MLR also supplies the standard error of the estimate for the fit and the correlation coefficient. Finally, MLR offers the opportunity to use the regressed equation to calculate values along the fitted hyper-curve.

Operationally, MLR employs two distinctly different methods for finding the regression coefficients. The first method uses matrix algebra techniques and is quite fast. The second method utilizes a very stable form of steepest descent optimization. This second approach is much slower in execution, but requires significantly less computer memory and can handle "ill-conditioned" situations with high accuracy. Also, with this technique, the fit is made one dimension at a time, and the coefficients and standard error of the fit are displayed at each step.

MLR is supplied with a 16 page manual which carefully outlines program operation.

Requires at least 16K of program memory (Atari version requires at least 24K).

Price: $24.95 Cassette
$28.95 Diskette
$31.45 8" CP/M Disk

COLLECTIONS

DYNACOMP offers reduced prices on the following collection:

REGRESSION I, REGRESSION II and MULTI-LINEAR REGRESSION are available for:

$51.95 (3 Cassettes)
$63.95 (3 Diskettes)
$69.95 (3 8" CP/M Disks)

## STATTEST

(available for all computers)

STATTEST performs statistical tests of hypotheses and includes t-tests, chi-square tests, and F-tests as well as simple regression and a random number generator.

Data can be entered under program control or from tape or disk. Any external file which already contains data in the simple format required may also be used. Once the data is loaded, it may be edited by the program's own data manipulation routine. Data can be changed, added, deleted, or any combination thereof. Data can also be listed upon entry and after editing if desired.

When the data is ready, descriptive statistics are calculated, the hypothesis to be tested is stated, and the test is performed. Previously calculated statistics may be optionally used instead of data entry.

The 19 page instruction book is structured so as to allow the experienced statistician to make successful use of the program immediately as well as to assist the new user in the proper application of these powerful statistical tools. Reference to the theory section of the documentation should be made if statistical hypothesis testing itself is not fully understood.

STATTEST is ideal for the experienced statistician as well as the occasional user.

Tape version will run in a 16K Model I or Model III.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 CP/M Disk

## MULTIPLE REGRESSION AND MULTIPLE/PARTIAL CORRELATION

(Apple only)

MULTIPLE REGRESSION AND MULTIPLE/PARTIAL CORRELATION was designed with the statistician in mind, and is reminiscent of the statistical routines provided on the large mainframes. First you may build and edit files with the options of changing data, adding data, increasing/decreasing the number of variables, increasing/decreasing the number of individuals and shuffling variables or individuals. These data may be saved or recalled from disk (the same file format as used in PRINCIPAL COMPONENTS AND FACTOR ANALYSIS). Then you have the choice of running *stepped* regression or multiple regression with partial correlation. The stepped regression examines the variables one at a time, choosing in turn the one which explains the most residual variation. For stepwise regression you are provided with the regression equation, standard errors of the coefficients, regression analysis of variance, and the correlation matrix. For multiple regression (without steps) you may also perform partial correlation with respect to any given variable, and the regression will be done with and without that variable.

All the functions are menu driven and the user prompts are simple and straight forward. The disk data file format is simple, making is easy to convert your current data files into a format acceptable to MULTIPLE REGRESSION AND MULTIPLE/PARTIAL CORRELATION.

Price: $39.95 Diskette

## PROFESSIONAL AID

(Commodore 64 only)

Here is one of the most powerful and versatile statistical packages available for the C-64.

In terms of number crunching, PROFESSIONAL AID will calculate the standard statistics (mean, median, mode, standard deviation, variance, min/max, range) and display (tabular and histogram) the frequency distribution for a set of data. It will determine bivariate (two variable) regression fits, providing not only the fitted coefficients, but also standard errors of the estimates for each coefficient, the covariance, R and $R^2$, residual variance, residuals, and scatter plots. You also have the choice of several automatic data transformations, and can define your own.

PROFESSIONAL AID also does multiple linear regression. The results presented are the estimated coefficients and their standard errors, T values, and betas. Also supplied is $R^2$, the standard error of the estimate, the F value, and the residuals. You may also make variable transformations so that you can perform nonlinear regression, (simple examples: polynomial regression, $Y = a_0 + a_1X_1 + a_2 \ln X_2 + a_3 \exp X_3$, etc.).

Another feature is *short-term forecasting*. Three methods are employed: linear regression, moving averages (span specified by the user), and exponential smoothing. In the latter case, you may choose the weighting factor, or you may let the computer choose the optimal value through linear regression.

So much for the bean counting, now for the graphics.

PROFESSIONAL AID has several options for graph creation.

- Bar charts – You may plot *multi-variable* horizontal and vertical bar charts.
- Pie charts – High resolution and labelled!
- High-resolution line graphs.
- High-resolution scatter/point graphs.

For all the graphs, the axes are drawn, the scales are shown, and the axis labels are displayed.

For those with printers (Commodore 1525/MPS-801, Epson MX or FX series, Gemini-10 or -15, Mannesmann Tally MT-80), you may have your statistical results, charts, and graphs printed out (high-resolution screen dump).

Menu driven, easy to use, and very well documented!

Price: $99.95 Diskette

## PRINCIPAL COMPONENT AND FACTOR ANALYSIS

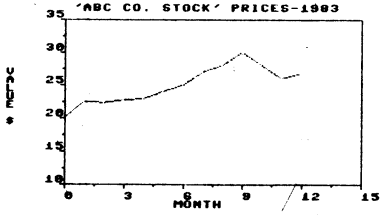
(Apple only)

PCFA is a menu-driven collection of subprograms with which you may enter and edit data and perform various calculations. For example, you may compute correlation matrices, standardize your data, calculate principal components and analyse factors, rotate your data using Kaiser's varimax method, and determine factor score coefficients and factor scores. In the principal component analysis and varimax rotation you can specify the number of decimal places accuracy required. You may also conveniently alter your raw data by increasing or decreasing the number of variables or "individuals", as well as shuffle both the variables and individuals. All in all, PCFA is a powerful multivariate analysis package. (*Note:* Although PCFA does the calculations, it is left to the user to evaluate the results. Therefore some familiarity with the subject is required: references are given).

Requires 48K. A printer is supported.

Price: $49.95 Diskette

Sample display:



## BASIC STATISTICAL SUBROUTINES
### VOLUME I
(Available for all computers)

BASIC STATISTICAL SUBROUTINES, Volume I, is a collection of non-parametric statistics routines keyed to the text "Non-Parametric Statistics for the Behavioral Sciences" by Sidney Siegal (McGraw-Hill). The routines are written in BASIC and can all be called from an easy-to-use menu. Full facilities for data storage, retrieval and editing are also provided. Comes with a 100-plus page instruction book. The subjects covered are:

- Binomial Test
- Chi Square One Sample
- Kolmogorov-Smirnov One Sample
- One Sample Runs Test
- McNemar Test
- Sign Test
- Wilcoxon Matched Pairs Signed Ranks Test
- Walsh Test
- Randomization Test for Matched Pairs
- Fisher Exact Probability Test
- Fisher-Tocher Test
- Chi Test for Two Independent Samples -NxN Chi
- Yates 2x2 Chi
- Median Test
- Mann-Whitney U Test
- Kolmogorov-Smirnov Two Sample Test
- Wald-Wolfowitz Runs Test
- Moses Test of Extreme Reactions
- Randomization Test for 2 Independent Samples
- Cochran Q Test
- Friedman Two-Way Anova by Ranks
- NxN Chi (Chi Test for 2 Independent Samples)
- Extended Median Test
- Kruskal-Wallis Anova
- Contingency Coefficient C
- Spearman Rank Correlation Coefficient
- Kendall Rank Correlation Coefficient
- Kendall Partial Rank Correlation Coefficient
- Kendall Coefficient of Concordance

Requires 32K, one disk
Price: $99.95

## REGRESSION ANALYSIS
(Commodore 64 diskette only)

REGRESSION ANALYSIS is a multilinear regression package designed specifically for the Commodore 64 computer. It not only calculates the regression fit, but also provides fitted Y values (for given inputs), residuals, residual plots, scattergrams, variable transformations, variable naming (a very useful feature when dealing with many dimensions and several transformations), standard error of the fits and coefficients, the T-statistic, the F-statistic, the Durbin-Watson statistic, ANOVA tables, correlation matrices and more. The manual (23 pages) is clearly written and contains step-by-step instructions and examples on how to use the package. This is the best integrated and most complete multilinear regression package available for the Commodore. Printers are supported, but are not necessary.

Price: $39.95 Diskette

## DATA SMOOTHER
(available for all computers)

This package provides the user with a fast and easy means to least-squares smooth equally spaced data and plot the results. Any size data set may be treated within the memory limits of your machine. The variation in each data point is smoothed according to the weighted average of points surrounding it. The averaging span is 3 to 25 points. The order of the local smoothing is linear to quintic (first to fifth degree polynomial). Also calculated are the smoothed first and second derivatives of the data at each point.

The width of the plot is user-controlled. The software automatically considers the printer width chosen and number of data points to produce a graph having a good aspect ratio.

This program is very useful for smoothing out day-to-day stock market fluctuations in order to determine underlying trends. It is also beneficial to the business man in planning inventory based on varying sales volume. The scientist and engineer may apply the smoothing software to noisy data sets. Communications engineers can apply it to incoming data as a "digital filter."

DATA SMOOTHER is extremely well documented in the accompanying 38 page manual which describes both the theory behind the program, as well as its use.

Requires 16K. Price: $19.95 Cassette
$23.95 Diskette
$26.95 8" CP/M Disk

## STATISTICAL SAMPLE PLANNER
(Apple only)

STATISTICAL SAMPLE PLANNER makes it easy to find the sample size and strategy that best meet your needs. This friendly program is for you if you're concerned with questions such as these:

Should I stratify or would simple random sampling be better?

If stratification, should I sample by a proportional approach or would I save money and still achieve necessary statistical precision with an optimum allocation strategy?

How should I proceed to achieve given standards of precision at the level of individual strata as well as at a population level?

For pre-specified precision total sample size, what precision and cost can be expected?

For pre-specified precision standards what sample sizes and costs will be required?

What is the smallest sample that will meet my needs?

How can I capitalize on information about individual strata (size, distribution shape, range, variation, sampling expense) to efficiently accomplish my sampling goals?

STATISTICAL SAMPLE PLANNER will be of value to you if you apply sampling techniques to survey research, market analyses, quality control or other areas involving random sampling of independent units. STATISTICAL SAMPLE PLANNER will quickly compare the benefits of optional plans you want to consider. It also makes an effective tool for teaching sampling. A clearly written 28-page manual includes theory, formulae, examples, program listing and references.

Requires 48K.

Price: $39.95

## ANALYSIS OF VARIANCE

ANOVA
(not available for PET or on Atari Cassette)

ANOVA is actually four programs in one. Each program performs a specific task matched to the designed experiment under analysis.

1. A one-way ANOVA produces the treatment sum of square, mean square, and F ratio along with the error mean square. This algorithm accepts unequal numbers of replicates per treatment level and unlimited numbers of treatment levels and replicates.
2. Two-way ANOVA performs an analysis of either fixed or random factors with equal numbers of replicates (repeat measurements) per cell. There is no practical limit on the number of levels or replicates. Sums of squares and mean squares are printed for both factors and the interaction as well as the error sum of squares and all F ratios.
3. The "N-way" (for N up to 5 factors) will accept up to 4 levels per factor or any combination of levels not to exceed 1024 treatment combinations in 16K of core. Sums of squares and mean squares for all main effects and up to 3 factor interactions are computed. The appropriate (residual or pure error) mean square is used to compute the F ratios.
4. YATES analysis computes the mean square and half effect for two level factorial and fractional factorial experiments. All main effects and interactions are computed and printed out.

In all programs except the YATES, the means for the main factors are printed. Unlike many large computers FORTRAN-based ANOVA systems, data entry is interactive and at the user's option. A data file may be created for editing and re-entry at a later time.

Documentation (15 pages) includes a guide to experimental design and methods to compute components of variance for the random model ANOVA. Examples and test data are provided to allow the user to practice with known information before applying the programs to their own data.

Requires 16K program memory space.

Price: $39.95 Cassette
Price: $39.95 Cassette
$43.95 Diskette
$46.45 8" CP/M Disk

## NUMBERKRUNCHER COLLECTION

(TRS-80 only)

NUMBERKRUNCHER I and NUMBERKRUNCHER II may be purchased as a collection for $69.95 (two cassettes) or $74.95 (two diskettes). This collection can not be applied to further quantity discounts.

## NUMBERKRUNCHER I

(TRS-80 only)

NUMBERKRUNCHER is an extremely powerful data processing package. Because NUMBERKRUNCHER is actually a collection of programs (version 2.0), it can perform its operations in systems as small as 16K. In terms of data input/output, NUMBERKRUNCHER has the following features:

- In-memory data base common to all program modules
- Up to 255 data sets, each with a 6 character name, within the data base
- Complete data editing facilities
- Storage I/O and printer support for data bases and data sets

Also provided is a module to perform multiple linear correlation and regression with provisions for printing the variance/covariance matrix. Included is the ability to predict, as well as examine the residuals. These statistical analysis procedures are supported by a graphics module which draws both scatter diagrams as well as histograms. Axis labelling is available, as well as cummulative distribution plotting. Another feature, and one which is unique, is the transform module. With this subprogram you may transform your data in any of 47 ways (one being a user-defined transformation). These transforms include addition/subtraction of two data sets, trigonometric and logarithmic transformations; standard deviation normalization; lead/lag moving average; linear combinations; and many more.

These and other features are fully described in the extensive (55 pages) documentation package supplied with NUMBERKRUNCHER. If you deal with numbers and have a TRS-80, NUMBERKRUNCHER is a must!

Version 2.0 consists of several separate programs on cassette and requires only 16K of memory. Version 2.1 is composed of a single program and needs 32K to operate. State which version you wish.

Price: $39.95 Cassette
$43.95 Diskette

## NUMBERKRUNCHER II

(TRS-80 only)

This is the second software package in the NUMBERKRUNCHER series. NUMBERKRUNCHER II contains all the excellent data creation, storage, manipulation and editing features of NUMBERKRUNCHER I, as well as nice bar graph displays.

There are two types of statistical calculations performed by this program. The first is a comprehensive calculation of summary statistics, including ten simple statistics and a Kolmogorov goodness-of-fit test. The simple statistics are the mean, median, max., min., midrange, sample standard deviation, variance, skewness, kurtosis and Durbin-Watson statistic.

The second main set of calcuations involve the auto- and partial-correlations. Included are the differencing transform and the Box-Pierce statistic.

*NUMBERKRUNCHER II is supported by an excellent 43 page instruction manual. It is available in both cassette and diskette; both 16K and 32K cassette versions are available (state which when ordering).

Price: $39.95 Cassette
$43.95 Diskette

## TIME SERIES / FORECASTING
(Apple only)

TIME SERIES is a menu-driven package consisting of several programs for data file creation, editing, and analysis. The analysis routines are largely based on the methods discussed in the text by Freund and Williams. The TIME SERIES files may be examined using one of three trend models: linear, quadratic, and exponential. Detrended and detrended/deseasonalized data files can be set up while running the time series analysis, and they may then be tested using the autocorrelation routine (included). This allows you to determine how well the model works by examining the residual for randomness.

The manual and disk include a time series data example derived from the text.

Requires 48K. Price: $29.95

## SL-MICRO
(IBM and CP/M only)

SL-MICRO is an easy-to-use statistical language which should already be familiar to many users of statistical packages on mainframes. SL-MICRO can process large data files containing up to 32,600 cases with 200 variables. Professional results are produced very rapidly.

The procedures implemented include frequencies, crosstabs, condescriptive, Pearson correlation and multiple regression. The frequencies procedure calculates counts and percentages for categorical variables with statistics and histograms as optional output. The crosstabs procedure calculates two-way and three-way crosstablulation tables and includes chi-square statistic. Both frequencies and crosstabs can handle real and alphanumeric data as well as the usual integer data. Condescriptive calculates descriptive statistics. The Pearson correlation procedure also includes the t-statistic and a covariance table as options. The multiple regression routine performs either stepwise or blockwise multiple linear regressions. It can also do polynomial regression by using the data transformation routines to calculate quadratic or cubic terms. Interaction terms can be calculated in the same way. The user can also specify the order of inclusion of variables in the equation using hierarchial inclusion levels. The Longley regression test has been used to check accuracy. SL-MICRO produces coefficients to the same accuracy as SPSS on a mainframe.

SL-MICRO includes a powerful group of data transformation and selection commands. The compute command can calculate new variables from existing variables using simple algebraic expressions. The recode command can be used to categorize metric variables or to convert alphanumeric to numeric variables. The IF command allows the user to calculate new variables only under specified conditions. The SELECT IF command selects a subset of the data file for processing. SL-MICRO also has functions including logarithmic and trigonometric which can be used for more complex operations.

SL-MICRO includes many features to make your output more professional and easily understood. These features include variable and value labels, report titles, and long variable names. The output is designed for eighty-column printers.

Other features have been provided to make SL-MICRO easy to use. These features include English error messages and missing values processing in all statistical procedures. SL-MICRO is also compatible with most database systems. It can read files with either fixed-field records terminated by carriage returns or with comma delimited fields. You can also use most word processors or text editors with SL-MICRO.

SL-MICRO is available for the IBM PC under PC-DOS and for most machines running MS-DOS. It is also available for CP/M-86 in IBM PC or 8-inch formats. Both 16-bit versions require 128K of memory and two disk drives or a hard disk.

Price: $249.95 Diskette/Disk

## Crosstabulation Tables

PLAYACT MAJOR PLAY ACTIVITY BY WX WEATHER

| PLAYACT | | WX CLEAR & WARM | COLD | RAINY | ROW TOTAL |
|---|---|---|---|---|---|
| TELEVISION | 1 | 4 | 3 | 2 | 9 |
| | | 44.4 | 33.3 | 22.2 | 37.5 |
| | | 28.6 | 42.9 | 66.7 | |
| | | 16.7 | 12.5 | 8.3 | |
| INSIDE TOYS | 2 | 2 | 1 | 0 | 3 |
| | | 66.7 | 33.3 | 0.0 | 12.5 |
| | | 14.3 | 14.3 | 0.0 | |
| | | 8.3 | 4.2 | 0.0 | |
| OUTSIDE TOYS | 3 | 3 | 1 | 0 | 4 |
| | | 75.0 | 25.0 | 0.0 | 16.7 |
| | | 21.4 | 14.3 | 0.0 | |
| | | 12.5 | 4.2 | 0.0 | |
| OUTSIDE PLAYMAT | 4 | 1 | 1 | 1 | 3 |
| | | 33.3 | 33.3 | 33.3 | 12.5 |
| | | 7.1 | 14.3 | 33.3 | |
| | | 4.2 | 4.2 | 4.2 | |
| INSIDE ADULTS | 5 | 3 | 0 | 0 | 3 |
| | | 100.0 | 0.0 | 0.0 | 12.5 |
| | | 21.4 | 0.0 | 0.0 | |
| | | 12.5 | 0.0 | 0.0 | |
| OUTSIDE ADULT | 6 | 1 | 1 | 0 | 2 |
| | | 50.0 | 50.0 | 0.0 | 8.3 |
| | | 7.1 | 14.3 | 0.0 | |
| | | 4.2 | 4.2 | 0.0 | |
| | COLUMN TOTAL | 14 | 7 | 3 | 24 |
| | | 58.3 | 29.2 | 12.5 | 100.0 |

CHI SQUARE = 6.2698 WITH 10 DEGREES OF FREEDOM.
NUMBER OF MISSING OBSERVATIONS = 1

## Multiple Regression

DEPENDENT VARIABLE HEALTHCOST BILLIONS OF DOLLARS
MEAN RESPONSE 109.529 STD. DEV. 64.9472

VARIABLES ENTERED ON STEP 1
CPI CONSUMER PRICE INDEX

0.9977 MULTIPLE R
0.9954 R SQUARE
0.9950 ADJUSTED R SQUARE
4.5728 STANDARD ERROR

| ANALYSIS OF VARIANCE | DF | SUM OF SQUARES | MEAN SQUARE | F |
|---|---|---|---|---|
| REGRESSION | 1 | 67176.583 | 67176.583 | 3212.629 |
| RESIDUAL | 15 | 313.652 | 20.910 | |

VARIABLES IN THE EQUATION :

| VARIABLE | B | STD ERROR B | F | BETA |
|---|---|---|---|---|
| CPI | 1.3817 | 0.0244 | 3212.6289 | 0.9977 |
| (CONSTANT) | -86.4476 | | | |

VARIABLES NOT IN THE EQUATION :

| VARIABLE | PARTIAL | TOLERANCE | F |
|---|---|---|---|
| ENERGY | 0.8454 | 0.0000 | 41.7485 |
| GRADS | 0.7361 | 0.0000 | 16.5611 |
| YEARS | 0.5357 | 0.0000 | 5.6342 |

## Descriptive Statistics

TPRICE PRICE PER 100 TOWELS

| | | | | | |
|---|---|---|---|---|---|
| MEAN | 0.659 | STD ERR | 0.049 | STD DEV | 0.269 |
| VARIANCE | 0.072 | KURTOSIS | 6.793 | SKEWNESS | 2.246 |
| RANGE | 1.446 | MINIMUM | 0.314 | MAXIMUM | 1.760 |

VALID CASES 30 MISSING CASES 0

## HSD STASTICAL SOFTWARE

(Apple only)

**Background:** DYNACOMP continually reviews (and sometimes acquires) the software products of other publishers. Our goal is to provide you with the best software available, even if it isn't written by DYNACOMP, and to offer it at a discount price. In this case we have added three popular packages from Human System Dynamics (HSD): STATS PLUS, REGRESS II (not to be confused with REGRESSION II - Parafit), and ANOVA II. Each package has received excellent reviews in the literature (see Review section). In our evaluation, we found these products to be well written and the documentation to be exceptionally complete (60 to 100 pages).

**General Specifications:** Each of the three packages is designed to be used with a 48K Apple II (plus, e, or c), one or two disk drives, and a printer (optional). Each allows you to create files, delete, edit, merge, create subfiles, search for and select particular records, transform data, etc. Also, each package can read the other's data files, as well as sequential files created by VISICALC (PRINT FORMAT). Also, each has high-resolution plotting capabilities (scatter plots, line plots, and bar graphs).

See the review section for more information.

**STATS PLUS** – Price $179.95

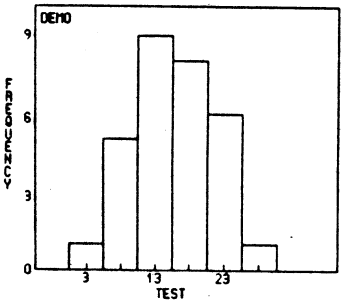
STATS PLUS accepts: 1 to 20 variables per file, keyboard or disk-file data, and print-format files from VISICALC.

STATS PLUS performs: data ranking, file ranking, file restructuring, 1-way to 5-way crosstabulation, 1-way to 4-way data-file search, and file and subfile creation.

STATS PLUS calculates: descriptive statistics, 14 data transformations, frequency distribution, cumulative frequency and percent, percentiles, correlation matrix, Pearson r, Spearman Rho, Kendall Tau, partial correlation, 1 or 2 predictor regression, 1-way or 2-way Randomize Anova, t-Test for independent groups, t-Test for correlated groups, t-Test against population mean, Chi-square, Fisher exact test, Mann-Whitney/Rank-Sum test, signed-ranks test, Kruskall-Wallis, Wilcoxon signed ranks, and Friedman Anova by ranks.

STATS PLUS produces: printed reports of results, printed copies of data, and plots and bar graphs on CRT or disk.

STATS PLUS sample graphics:




**REGRESS II** – Price: $139.95

REGRESS II accepts: 1 to 20 variables per analysis, keyboard or disk-file data, correlation data, and print-format files from VISICALC.

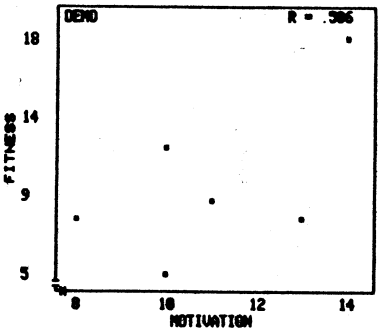
REGRESS II performs: regression analysis. The five regression solutions all give you a complete Anova table output, along with regression weights, t-tests, and p-values. The stepwise solution gives a summary of steps taken. All solutions produce predicted and residual scores.

REGRESS II performs: correlation analysis. You can easily obtain correlation and covariance matrices along with descriptive statistics, multiple and partial correlations, and serial correlation of residuals.

REGRESS II calculates: sum of squares (SS), mean square (MS) table, multiple correlation coefficient, $R^2$ with error estimate, standard error, coefficients with standard error, actual/predicted/residual table, serial correlation and serial residuals, and Durbin-Watson statistic.

REGRESS II produces: printer reports of results, printer copies of data, and plots and bar graphs on CRT or Disk.

REGRESS II sample display:




MULTIPLE REGRESSION MENU

1. SIMULTANEOUS SOLUTION
2. FORWARD SOLUTION
3. BACKWARD SOLUTION
4. STEPWISE SOLUTION
5. POWER POLYNOMIALS
6. RETURN TO MAIN MENU

**ANOVA II** – Price: $139.95

ANOVA II accepts: 1 to 5 factors, 2 to 36 levels per factor, randomize block design, repeated-measures designs, equal or unequal n (unweighted means analysis), randomized designs with up to 10,000 data points, mixed designs with up to 1,200 observations per group, and completely repeated measures designs with up to 1,200 data points.

ANOVA II performs: analysis of variance, analysis of covariance with a single covariate, Latin square analysis, data disk-file creation, data review/edit, data transformations (such as arcsin, power, log, ln, etc.), and data-file joining.

ANOVA II calculates: Anova tables, SS between regression, SS within regression, F values, P values, and within-group correlation.

ANOVA II produces: complete ANOVA II summary table with f-test and p-values on CRT or printer; mean, standard deviation, and sum-of-square for each cell on CRT or printer, and high-resolution plots and bar graphs on CRT or to disk files.

## XTRAPOLATOR
## TIME SERIES FORECASTS
(Apple and IBM only)

XTRAPOLATOR is a comprehensive and multipurpose forecasting system. The analysis framework is based upon methodologies encompasing simple to complex extrapolative techniques. Twelve distinct forecasting methods can be applied to a data series. In addition, the competing methods are rated based upon their best fit and likelihood of accuracy. XTRAPOLATOR does not require programming experience. The user applies simple commands in a menu driven mode.

Imagine the following management scenario. You, a business analyst or manager, need to forecast a variable. You also don't want to waste time with unsophisticated tools. But the more complex methods are too abstract or are available only on expensive time-sharing systems. Or, you simply do not like the slow turn-around time available on mainframe computers. Your choice is clear. XTRAPOLATOR is the forecasting software with efficient methods offered for cost effective and convenient microcomputers.

What makes this package special?

- menu driven programs
- fast, easy data management
- competing forecast methods
- automatic best-fit curve selector
- plotting in high-resolution graphics
- uses Visicalc™ and Lotus™ data files.

Below is a brief description of some of the menu-selectable functions:

DATAMAKING: create data files with an upper limit of 700 observations. Update a file by adding data or changing existing data points. Copy to create duplicate files. Merge files by adding, subtracting, multiplying, or dividing. Delete data from the beginning or end of a file. Data can be scaled by any arithmetic operator.

PLOTTER: Graph your historical and forecast data in a high-resolution mode. You may choose to develop either univariate or bibvariate line graphs. You even have the choice to save the plot for future printing.

FORECAST METHODS: Select Linear Trend to derive a straight line forecast. Choose Exponential Curve to develop a forecast that accelerates over time. Use Third Order Polynomial for S-shaped curves. Apply Moving Average to volatile data. Select Double Moving Average to add a trend to your forecast. Choose Exponential Smoothing to weight historical data before forecasting. And there are still six other forecasting methods to apply.

DIF FILES: Store data in translated formats. This way you can use Visicalc™ and Lotus™ created files.

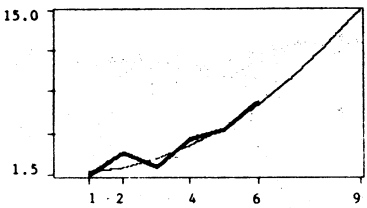
OTHER OPTIONS include selection of the forecast horizon, listing the historical plus forecast data and listing the fitted values plus forecast. You may save the listings to a file. You may choose to Seasonally Adjust your data and forecast by a ratio to moving average method. Rate your method based upon its R-squared value. Or, let the program automatically guide you to the best method.

XTRAPOLATOR is very easy to use and includes a very carefully prepared manual.

It requires 128K (IBM PC), 48K (Apple) and one or two disk drives. A printer is supported but not required.

Price: $189.95 Diskette

Sample print out:




| RATINGS | |
|---|---|
| '10' | IS PERFECT OVER HISTORICAL DATA |
| 8.6 | LINEAR TREND |
| 9.2 | EXPONENTIAL CURVE |
| 8.2 | GEOMETRIC CURVE |
| 9 | SECOND ORDER POLYNOMIAL |
| 8.8 | THIRD ORDER POLYNOMIAL |
| 5.4 | AUTOREGRESSIVE TREND |
| 8.8 | GOMPERTZ CURVE |
| 5.7 | MOVING AVERAGE |
| 8.2 | DOUBLE MOVING AVERAGE |
| 1.2 | EXPONENTIAL SMOOTHING |
| 7 | DOUBLE EXPONENTIAL SMOOTHING |
| 8.6 | TRIPLE EXPONENTIAL SMOOTHING |

## MICROBJ
## BOX JENKINS FORECASTING
## ARIMA MODELING
(Apple and IBM only)

MICROBJ is a powerful, sophisticated, and multipurpose time series forecasting system based on the BOX-JENKINS methodology. MICROBJ does not require programming experience. By using simple commands, you easily proceed through the data manipulation, analysis, graphics, and forecasting modules. Not only do you have mainframe analysis capability at your fingertips, but the cost is less and the ease of use is much greater. Also, MICROBJ is fast (because it's compiled).

Here is an abbreviated listing of MICROBJ's capabilities for ARIMA model building:

IDENTIFICATION CAPABILITIES
- Log or Exponential Transformation
- Seasonal and Non-Seasonal Differencing
- Standard Deviation/Mean Plots in groups of 4, 8, & 12
- Descriptive Statistics: Mean, Variance, Standard Deviation, Coefficient of Variation
- Autocorrelation, Partial Autocorrelation up to 37 lags, Listed and Plotted
- Estimated Standard Errors, Chi Square with Degrees of Freedom

ESTIMATION CAPABILITIES
- Parsimonious Modeling Ability with up to 10 parameters
- Multiplicative and Additive Models of any Order
- Maximum Liklihood, Marquardt Algorithm includes Backforecasting
- Parameter Estimates Include Standard Errors
- Residuals, Fitted Values, Residual Variance and Standard Deviation, Auto and Partial Autocorrelations
- Estimated Model Stored for Forecasting

FORECASTING CAPABILITIES
- Point Forecasts and 95% Confidence Intervals
- Plots and Listings
- Automatic Transformation from log based models

The 52-page MICROBJ manual includes not only excellent operating instructions, but also clear tutorials.

Time series analysis has evolved into widely used technique in economics, finance, marketing, and engineering applications. Previously, this analytical method required cumbersome and expensive mainframe computers. The other option was to use very costly time-sharing systems. Now, you, the professional forecaster, can let the data tell its story on a microcomputer.

Requires 256K (IBM PC), 64K (Apple II series), and one or two disk drives. A printer is supported but not required.

Price: $289.95 Diskette

## NUAMETRICS
## ECONOMETRIC ANALYSIS
(Apple and IBM only)

NUAMETRICS is the user friendly menu-driven program for professionals interested in serious econometric analysis. It incorporates widely used statistical methods with simple operational instructions. By controlling the computer's arrow keys and the return key, a user can move from menu to menu developing data files or selecting procedural methods. There are no special commands to memorize. NUAMETRICS allows the professional to use time efficiently developing models, not learning another computer system.

Single and multiple regression techniques are the most widely known and frequently used tools for statistical analysis and forecasting. These models describe a relationship between a variable (dependent) of interest and one or more related explanatory variables. Econometric analysis is extremely attractive to managers. It enhances the understanding of economic relationships and provides quantitative estimates. Now, you can avoid expensive time-sharing systems and slow turn-around mainframe computers.

What makes NUAMETRICS special?

- menu driven programs
- fast, easy data management
- features seasonal adjustments
- plotting in high-resolution graphics
- uses Visicalc™ and Lotus™ data files.

Here is a brief description of some of the menu options:

DATAMAKING: Create data files. Update or delete files instantly with both historical or cross-sectional data. Files can be copied, listed, and combined in any arithmetic form. Datamaking allows the user to quickly change data to logs, antilogs, squares, square roots, reciprocals, moving averages, and percentages. The index module includes a seasonal adjustment feature. Data can be lagged or differenced to any order.

PLOTTER: Choose from a menu of choices to provide univariate, bivariate graphics and scatter diagrams in a high-resolution mode.

REGRESSION ANALYSIS: Use up to seven explanatory variables and six-hundred observations. The coefficient of determination, its corrected version, the standard error of the estimate, the F value, and the standard errors of the parameter estimates are included in the main output. You may select correlation coefficients of the independent vairables or a forecast module that allows for predictions and storage in a data file.

GENERAL STATISTICS: Sort and rank according to ordinal or cardinal values. Other features include frequency distributions, summary statistics (mean, median, mode, skewness, variance, standard deviation, and coefficient of variation). You can perform an autocorrelation test to check for stationarity. Simple correlation and elasticity estimates are easily developed. Forecasts can be tracked against actuals, with several statistics.

DIF FILES: Provides translation of data so that you can interface to popular programs such as Visicalc™ and Lotus™.

RESIDUAL ANALYSIS: Allows the listing of residuals, their autocorrelation function, the fitted values, and the Durbin-Watson statistic.

Both the software and manual are designed for ease of use and convenience.

Requires 128K (IBM PC), 48K (Apple), and one or two disk drives. A printer is supported, but not necessary.

Price: $189.95 Diskette

Sample Print Out:

```
SALES REGRESSION                          N = 8
******************************************

PARAMETER        ESTIMATE        STD. ERROR
------------------------------------------------
INTERCEPT        599.533         93.8393
PRICE            -59.2784        4.922
ADS              2.9506          2.1374

STATISTIC        VALUE
------------------------------------------------
R SQD            .9728
R SQD (COR)      .9682
S.E.E.           21.6702
F VALUE          89.2507

DEPENDENT VARIABLE LISTING
******************************************

ACTUAL           ESTIMATE        RESIDUAL
------------------------------------------------
100              95.2663         4.7337
150              160.4459        -10.4459
200              228.576         -28.576
300              287.8544        12.1456
325              299.6567        25.3433
250              240.3783        9.6217
400              391.6583        8.3417
400              421.1641        -21.1641

DURBIN-WATSON = 1.4953

AUTOCORRELATIONS
------------------------------------------------

LAG              A.C.F.

1                .1522
2                -.367
3                -.3906

CORRELATION COEFFICIENTS
******************************************
INDEPENDENT VARIABLES LISTED IN ORDER

X1/X2            R= -.3375
```

### FORECASTING COLLECTION

MICROBJ, XTRAPOLATOR, and NUAMETRICS may be purchased as a collection for $539.95. Collections are not eligible for further quantity (10%-20%) discounts.

## IMPORTANT NOTICE

Look at the address label on this catalog. If there is an asterisk (*) in front of your name, this may be your last free DYNACOMP catalog. If you wish to continue receiving the DYNACOMP catalog, please fill out and mail the form which appears on the inside of the back of this catalog.

In cooperation with another engineering company, DYNACOMP is offering a powerful collection of chemical engineering programs for the TRS-80 (Model I, III and IV) and IBM PC computers. These are very professional programs which we can only briefly describe (see below). Disks are not copy protected so that you may make back up copies or use the modules as parts of other programs.

## HXPAK
(Heat Exchanger Analysis)

Computes the exit conditions from heat exchangers from inlet conditions. Treats gas/gas or gas/-liquid heat exchangers (single phase per side). The model yields thermal design information for heat exchangers.

Computes exit conditions from a boiler given the inlet conditions. This module can use either gases or liquids on the hot side and pure fluids or mixtures on the cold side. Produces thermal design information for a boiler.

Computes the exit conditions from a condenser given the inlet conditions. The condenser may use either gases or liquids on the cold side. Calculates exit conditions from inlet conditions. Multiple phase changes are allowed on both hot and cold sides. This code performs a detailed integration of both sides of a heat exchanger.

Price: $275.00

## FCPAK
(Fuel Cell Analysis)

Computes exit conditions at a fuel cell anode from the inlet conditions. Three separate ANODE Modules are supplied. These correspond to acid, molten carbonate, and alkaline fuel cells respectively.

Computes exit conditions at a fuel cell cathode from the inlet conditions. Three separate CATH Modules are supplied. These correspond to acid, molten carbonate and alkaline fuel cells.

Calculates the current density of a fuel cell from the cell voltage and operating conditions at the anode and cathode. As in the case of ANODE and CATH, three separate modules are supplied corresponding to the acid, molten carbonate and alkaline fuel cells respectively.

Price: $375.00

## PDROP

This code performs pressure drop distribution analysis for piping networks. It handles incompressible flow of water, and compressible flow of steam or air in circular crossection pipe, valves, and fittings. It can handle flows from laminar to fully turbulent.

Price: $74.95

## FLUIDPAK

Computes exit conditions from a compressor from inlet conditions.

Computes exit conditions from a turbine from inlet conditions.

Computes the power required to pump a gas given the flow rate and pressure rise.

Calculates particulates removal from a gas stream.

Calculates the size and cost of Rankine cycle turbines and generators.

Price: $225.00

## THERMOPAK

Computes enthalpy as a function of temperature and species flow, temperature as a function of enthalpy and species flow, specific heat and ratio of specific heats. Handles hydrogen, water (liquid or vapor), methane, carbon monoxide, carbon dioxide, oxygen, and nitrogen. Has eight species capacity and can accommodate naphtha, methanol, carbon, No. 2 Fuel Oil, or ammonia as the eighth species. Also handles aqueous fuel cell electrolytes.

Calculates the number of atoms of carbon, hydrogen and oxygen in a stream. This is especially useful in reforming reactors and burner analysis.

Calculates the equilibrium constants for the methane reform, methanol reform and shift conversion reactions.

Calculates the vapor pressure of water, ammonia, methanol and mixtures of water methanol, given a boiling temperature. Also calculates the saturation temperature, given a mole fraction and total pressure.

Calculates the mole fractions of species at a node or stream number. It may also be used to calculate the species flows given the mole fractions and total flows.

Calculates phophoric acid vapor loss from acid fuel cells. Also calculates the vapor pressure of water or $P_4O_{10}$ above phosphoric acid.

Calculates the vapor pressure of water above an aqueous potassium hydroxide solution.

Calculates the thermal conductivities and viscosities of the seven gases or mixtures of the gasses modeled. Gives a screen print of the thermodynamic conditions at a node or stream number. Displays the composition in moles and mole fractions, the enthalpy, temperature and pressure at the node.

Price: $199.95

## ACTIVE CIRCUIT ANALYSIS PROGRAM (ACAP)

(available for all computers except North Star & Atari)

ACAP is an active and passive circuit analysis program. It can be used to solve for the node voltages of a network. The circuit elements which can be analyzed by ACAP are resistors, capacitors, inductors, voltage sources, current sources, and a voltage-controlled current source. To describe a circuit to ACAP, you enter it in a simple algebraic form. Using the ACAP editor, you may easily enter and change the element descriptions. You may also save the circuit description on tape/diskette in order to later recall it.

To better understand the exceptional features of ACAP, its structure is briefly outlined below.

Requires 48K.

Price: $39.95 Cassette
$43.95 Diskette
$46.45 8" CP/M Disk

The circuit description must have nodes numbered 0 through N when there are (N+1) nodes in the circuit. The maximum number of nodes in a circuit description is 40. The program outputs node voltages referenced to node 0, or outputs node gains in db referenced to a specified node. "n1" through "n4" are node numbers. "Value" is the component value. "%-tol." is the percent tolerance of the component (%-tol. is optional). The r-value and i-value are the source values: r-value is the real part and i-value is the imaginary part (i-value is optional).

| ELEMENT | FORMAT |
|---|---|
| Resistor<br>R (resistance) | n1 n2 R value %-tol. |
| Capacitor<br>C (capacitance) | n1 n2 C value %-tol. |
| Inductor<br>L (inductance) | n1 n2 L value %-tol. |
| Resistor<br>G (conductance) | n1 n2 G value %-tol. |
| Voltage Source<br>V (voltage) | n1 n2 V r-value i-value |
| Current Source<br>I (current) | n1 n2 I r-value i-value |
| Voltage-Controlled Current Source<br>VC (conductance) | n1 n2 VC n3 n4 value %-tol. |

Note that transistors/amplifiers can be simulated with the voltage-controlled current source. As you can see from the above element description, ACAP includes an analysis of the uncertainty in the circuit response due to variations in the components. Some of the commands available to ACAP are:

DB - output results in decibels: DB <node 2>
F - frequency to be used: F<f initial, f final, f step>
PRINT - Print node voltages: PRINT <$n_1$, $n_2$, $n_3$, $n_4$, $n_5$>
REPEAT - Repeat calculation (to build statistics)
STAT - Calculate mean and standard deviation at nodes: STAT <$n_1$, $n_2$, $n_3$>

The STAT command uses the % tolerance values and the REPEAT number to build a MONTE CARLO description of the range of values at a node. The F command permits an analysis of the frequency response of the circuit.

As you can imagine, it is difficult to describe ACAP in the limited space of a catalog. However, you can appreciate its power!

Comes with a 12 page instruction manual.

## LOGIC SIMULATOR

(Apple only)

There are two ways to test a circuit design: build a prototype and experimentally examine all the input/output conditions, or probe the circuit's performance using LOGIC SIMULATOR. The latter approach is faster and less expensive, as well as being more amenable to rapid design iterations.

The circuit elements which may be treated by LOGIC SIMULATOR include the following:

- Multiple Input AND, NAND, OR, NOR, EXOR and EXNOR Gates
- Inverters
- J-K and D Flip-Flops
- One Shots

Inputs may be clocked in with varying clock cycle lengths and displacements. Change of state delays may be introduced to test for real life glitches and race conditions. The response of the system is available for display every clock cycle and, at the user's option, a timing diagram for any given set of logic nodes (including the inputs) may be simultaneously plotted using HIRES graphics.

All this is accomplished with a simulation language (operated through BASIC) designed specifically for this task. This language is both easy to learn and quick to use.

LOGIC SIMULATOR is supplied with a 9 page instruction manual and is ideal for use in the classroom where the student may design logic circuits and quickly test them. Another quality engineering program from DYNACOMP!

Requires 48K.

Price: $39.95 Cassette
$43.95 Diskette
$46.45 8" CP/M Disk

## LADDER NETWORK

(TRS-80, CP/M, and IBM only)

LADDER uses the technique of describing a network as a series of cascaded two-ports. This representation is sometimes pictured as a "ladder". Each two port is described individually, from load to source, in a data file generated by following the program prompts. Each element type and value is then read and an "ABCD" matrix for each element is generated. This matrix describes the transfer characteristics of the two-port element and the multiplication of two or more "ABCD" matrices will yield the total transfer characteristic of the series of two-ports. LADDER uses matrices (with complex numbers) to describe the transfer characteristics of passive networks (capacitors, resistors, inductors, and transmission lines). The network architectures may include parallel and series branches to any depth, open and shorted stubs, and two parallel or series ladder networks. All elements (except resistors) require a quality factor or loss figure be defined at a single, operator defined, frequency. With this information, the network responses are determined using "real world" components. This program can handle networks consisting of up to 50 two-port elements. Requires 32K.

Price: $29.95 Cassette
$33.95 Disk

## LOGIC DESIGNER

(North Star, Osborne and CP/M only)

LOGIC DESIGNER is an interactive digital design program (not a simulator) which greatly speeds up and simplifies digital hardware design. Error-free solutions of combinational logic problems having between 2 and 8 input variables are obtained quickly and easily. Previously, such capability has been available only on large mini and mainframe computers.

The program prompts for a user-defined truth table (including "don't care" conditions) and reduces the input data into two boolean logic equations. Either equation can then be directly and easily converted into digital hardware. The program asks for all necessary information and checks the responses for format errors. An entry editor is provided to allow corrections. Facilities are provided for modification, addition, or deletion of entries. You may also view the entries on command. The editor provides a fast and easy method of correcting errors without re-entering the entire data base.

Due to large amount of data reduction required for complex problems, speed is very important. The reduction process is therefore accomplished with fast and efficient assembly language code. Without it, the program run time would be greatly increased. Manual: 15 pages.

Requires 16K of program memory and an 8080/Z80 CPU.

Not available for Canon or Heath/Zenith.

Price: $34.95 Diskette
$37.45 8" CP/M Disk

## WIREMAP

(CP/M, IBM, and TRS-80 only)

WIREMAP is designed to allow electronic circuits and schematics to be computerized for the purpose of generating parts lists, wire lists, and signal lists. These lists may then be used for the purposes of production, debugging, trouble shooting, and documentation of the circuit. WIREMAP is especially useful for prototype, wire-map, and point-to-point circuitry, since the signal listing may be used as a guide to correctly wiring the circuit. The program also provides an easy means of checking for errors. Any open signals will be flagged during a wirelist printout. Includes easy to use data editing features.

Requires 16K (cassette), 32K (disk).

Price: $39.95 Cassette
$43.95 Diskette
$46.45 8-inch CP/M Disk

## MICROCOMPUTER LOGIC DESIGN PROGRAM

(Apple and IBM only)

MICRO-LOGIC was created to enhance the productivity of electronic digital design by providing an interactive drawing and simulation system, allowing you to quickly design and predict the performance of a circuit without your having to actually build it.

This software product will help you to:

- Draw a logic diagram directly on the CRT screen.
- Run a timing simulation of the network responding to user-defined input sources.

It's like building a breadboard and hooking up signal sources and logic analyzers to see what happens ... except that it's faster.

Logic diagrams are drawn directly on the screen using the Designer program. Using the keyboard commands, you move the drawing cursor around on the screen adding or deleting gates. Each time you add a gate, the system draws it at the cursor position. Drawing interconnecting lines and contacting gate input and output nodes using the PLOT and CONTACT commands allows you to create any type of logic network. Completed logic diagrams can then be saved in a diskette file.

When the drawing is complete, the sytem automatically prepares the netlist needed for the simulation.

Users may create their own gates. Up to 36 different 5-input functions may be defined and subsequently used in any network. Gate characteristics include name, delay, 64-state truth tables, and input/output clocking.

**Specifications**

| | |
|---|---|
| Simulation Type | Boolean State/Timing Simulator |
| Input | Macro Networks.<br>Drawn Logic Diagram.<br>Keyed-in Network Description.<br>Signal Source and Patterns.<br>Gate Truth Tables & Characteristics.<br>Clock Waveforms. |
| Output | Logic Diagram.<br>Timing Simulation in graphic or printer form.<br>Fanout Report.<br>Compare Report.<br>Input Pattern Listings.<br>Gate Library Listings<br>Network Listings.<br>Clock Waveform Listings. |
| Components Supported | NOR/OR, NAND/AND, Exclusive-OR, D FLIP FLOP, J FLIP FLOP, JK FLIP FLOP, Tri-State Gate, User-defined Gates, and powerful 16-pin MACROS. |
| Gates<br>Gate Types<br>Data Chan'ls | 1750 max. (IBM): 432 max. (APPLE)<br>36 max. (IBM): 18 max. (APPLE)<br>36 max. (IBM): 18 max. (APPLE) |
| Hardware Required | APPLE II, II plus, IIe with 64K RAM<br>2 Disk Drives, DOS 3.3<br>80-column Printer is Optional<br><br>IBM PC with 128K RAM.<br>Color Graphics Adaptor Board.<br>2 Disk Drives, DOS 1.1.<br>80-column Printer is optional.<br>Compatible with most MS DOS systems. |
| Medium | Supplied on a 5¼" mini floppy diskette with instruction manual. |
| Price | $399.95 |
| Evaluation Kit | $50.00. Identical to main product except limited to networks of 20 gates. |

## MICROCOMPUTER CIRCUIT ANALYSIS PROGRAM

(Apple and IBM only)

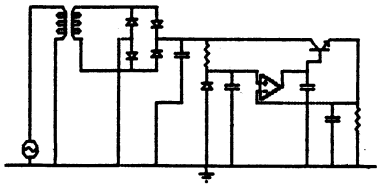
MICRO-CAP is a professional design tool created to enhance the productivity of electronics design by providing an interactive drawing and analysis system. It allows an engineer to quickly design and predict the performance of a circuit without having to actually build it.

The software product enables the user to:

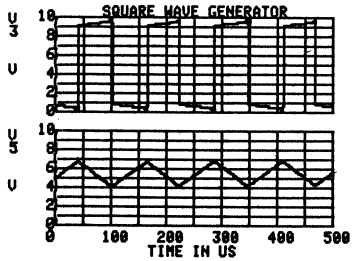
- Draw an electronic circuit diagram directly on the CRT screen.
- Run a time-domain simulation of the circuit responding to user-defined input sources.
- Perform an AC (Bode) analysis showing Gain and Phase Shift vs. Frequency.
- Perform a DC Transfer Characteristic analysis showing Output Voltage vs. Input Voltage.

It's like building a breadboard and hooking up signal sources and instruments to see what happens ... except that it's faster.

Circuit diagrams are drawn directly on the screen using the Designer Module. Using the keyboard you move the drawing cursor around on the screen adding or deleting components. Each time you add a component the system draws it at the cursor position. Drawing interconnecting lines allows you to create any type of circuit diagram. Completed circuit diagrams are then saved in a diskette file. A typical completed circuit diagram looks like this:

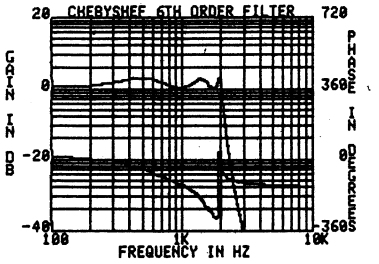


When you have completed a circuit drawing you can perform a Transient Analysis. In this mode the system calcualtes the voltage as a function of time on any two nodes in the circuit. The results look a lot like a dual-trace oscilloscope display:




Transient Analysis can also be generated in printer-plot or tabular fashion.

Alternatively you can perform an AC analysis:




**Specifications**

| | |
|---|---|
| Analysis Modes | AC Analysis (Bode Plots).<br>DC Transfer Characteristic.<br>Non-Linear Time Domain |
| Input | Drawn Circuit Diagram<br>Keyed Circuit Description<br>Standard Components Library |
| Output | CRT Bode Analysis (or Graphics Dump).<br>CRT DC Analysis (or Graphics Dump).<br>CRT Circuit Diagram (or Graphis Dump).<br>CRT Waveforms (or Graphics Dump).<br>Printer Plot of Waveforms.<br>Printer Tabular Listing of Node Voltages.<br>Network Listing. |
| Components Supported | Resistors, Inductors, Capacitors, Batteries, Sinusoidal Voltage Sources, Programmable Waveform Voltage Sources, Diodes, OP AMPS, Bipolar and MOS Transistors, Transformers, Polynomial and User-defined Sources, and Voltage, Current, or Time-Controlled Switches. |
| Nodes | 40 Maximum |
| Hardware Required | Apple II with Applesoft in ROM, or Apple II Plus or APPLE IIe with 64K RAM, DOS 3.3, and 2 Disk Drives.<br>80-column Printer is optional.<br><br>IBM PC, 128K RAM.<br>Color Graphics Adapter Board.<br>DOS 1.1, 2 Disk Drives.<br>80-column Printer is optional. |
| Medium | Supplied in compiled object code on a 5¼" mini-floppy diskette with a 130-page instruction manual. |
| Price | $399.95 |
| Evaluation Kit | $50.00. Identical to the main product except limited to 5 node circuits. May be credited towards purchase price. |

### HINT

(Apple disk)

I/O ERROR: Look at the disk. Which DOS (3.2 or 3.3) does it say? Are you running the same?

## FOURIER ANALYZER

(available for all computers)

FOURIER ANALYZER is a scientific program which can be applied to examine the frequency spectrum characteristics of defined duration signals, such as groups of pulses. The user inputs a data set which is Fourier transformed into the frequency space descriptors of amplitude and phase. The amplitude and phase results are displayed in tabular form. The input data and calculated results may also be plotted at the user's option.

Shown below are plotting examples in which the input data represented a square wave shifted off the origin. The amplitude plot clearly shows the characteristic "sinc" function form. The phase plot shows the expected discrete phase changes associated with the "sinc" function superposed on the linear phase change expected from the Shifting Theorem.

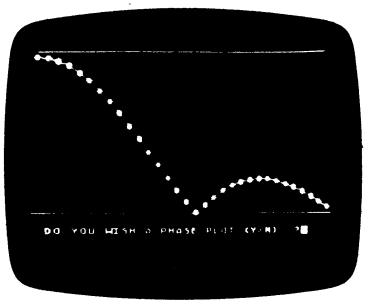
The input data set is limited in extent only by the memory size of the host computer, and is not restricted to equally spaced values.

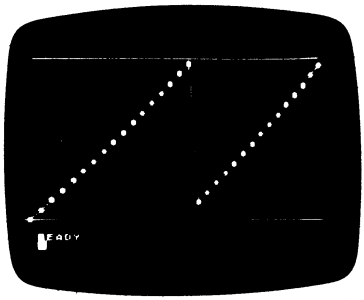
FOURIER ANALYZER is certainly a powerful and educational tool for the engineer, scientist, student, or anyone involved in cyclic phenomena (e.g., music, stocks, etc.).

Accompanying FOURIER ANALYZER is a 20 page manual.

Requires 16K of program memory (Atari version requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk




## TRANSFER FUNCTION ANALYZER

(available for all computers)

TRANSFER FUNCTION ANALYZER is a frequency spectrum analysis package designed with the engineer in mind. It applies the concept of the Fourier integral transform to an input data set to provide a frequency domain representation of the function approximated by that input data. TFA is based on DYNACOMP's popular FOURIER ANALYZER, but includes special data handling features. It also presents the results in conventional engineering terms (decibels, log-frequency).

The user may save and recall both the input data file and previously calculated results. Data files may be loaded (from cassette, diskette, or disk), added to, deleted from, and generally edited. As with FOURIER ANALYZER, the input data may be plotted before the calculations are started. The frequency domain results may also be plotted, as well as saved (to be later recalled for new plots). In addition, the analyses are easily separated with different frequency parameters without re-entering the data.

The transformed results are displayed in conventional engineering form. The amplitude points returned are in decibels (DB) relative to the peak value (0 DB). The phase is in degrees. The frequency transform is calculated in equal log-frequency intervals as is common practice in Acoustical and Electronic Engineering.

The frequency results may be optionally plotted. When the amplitude plot is performed, it is in decibel/log-frequency format. This permits easy identification of the characteristic "roll-off" in frequency response. For example, a 9 DB/octave (e.g., 10 log (F(W)) straight line roll-off of a three pole filter is immediately apparent from the plot.

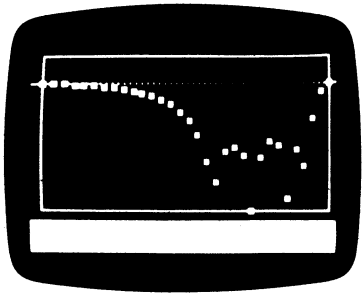
TFA was originally designed as part of a consulting assignment involving the analysis of amplifier transfer function. It is, therefore, a program which has been tested in an actual commercial application. In this particular case, the output data corresponding to the real time response of an amplifier to an input pulse ("delta function") was used directly as input to TFA, and the frequency amplitude results directly gave the transfer function for the amplifier.

Whereas DYNACOMP's FOURIER ANALYZER is well suited to the basic science and educational fields as well as many engineering applications, TRANSFER FUNCTION ANALYZER is a key tool for the electronics and acoustics engineer involved in the analysis of limited duration signals. Included in this package is a well written 20 page manual.

Requires 16K of program memory (Atari version requires 24K).

Price: $25.95 Cassette
$29.95 Diskette
$32.45 8" CP/M Disk

Sample display (Atari):



## HARMONIC ANALYZER

(available for all computers)

HARMONIC ANALYZER is the third in DYNACOMP's series of Fourier transform software packages. Whereas FOURIER ANALYZER and TRANSFER FUNCTION ANALYZER (TFA) were designed with limited duration signals in mind, HARMONIC ANALYZER is specific to repetitive wave forms (cyclic processes).

All the data entry, storage, retrieval, and editing features of TFA have been included, as well as the signal and transform plotting functions. The Fourier integral has been replaced with a Fast Fourier Transform (FFT) routine which is the essence of the harmonic analysis. A cubic spline interpolation procedure has been added so that the user may transform irregularly spaced data. Also, the data need not be entered in temporal order; it is sorted before being transformed.

The spline interpolation and sorting features are unique to HARMONIC ANALYZER and will be appreciated by those familiar with other FFT programs which require the data to be both in order and evenly spaced. The spline interpolation scheme was in particular chosen over others to minimize the unwanted interpolation oscillation ("ringing") associated with abrupt signal changes, such as square wave steps.

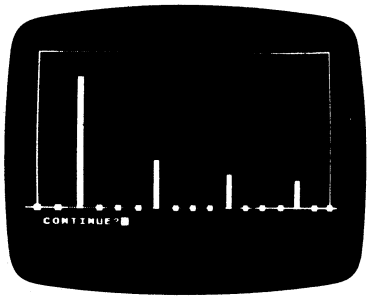
The FFT employed is a base-2 algorithm; that is, the number of data points must be an even power of 2. This places a small restriction on the input data set, but increases the speed of the transform calculation.

HARMONIC ANALYZER is a program which should be in the software library of every scientist, engineer, or experimenter who deals with repeating waveforms.

A 16 page manual is included. Requires 16K of program memory (Atari version requires 24K).

Price: $29.95 Cassette
$33.95 Diskette
$36.45 8" CP/M Disk

Sample display (Atari):




## DIGITAL FILTER

(available for all computers)

DIGITAL FILTER is a comprehensive data processing program which permits the user to design his own filter function or choose from a menu of filter forms. The filter forms are subsequently converted into non-recursive convolution coefficients which permit rapid data processing. In the explicit design mode, the shape of the frequency transfer function is specified by directly entering points along the desired filter curve. In the menu mode, ideal low pass, high pass and bandpass filters may be approximated to varying degrees according to the number of points used in the calculation. These filters may optionally also be smoothed with a Hanning function. In addition, multi-stage Butterworth filters may be selected. Features of DIGITAL FILTER include plotting of the data before and after filtering, as well as display of the chosen filter functions. Also included are convenient data storage, retrieval, and editing procedures.

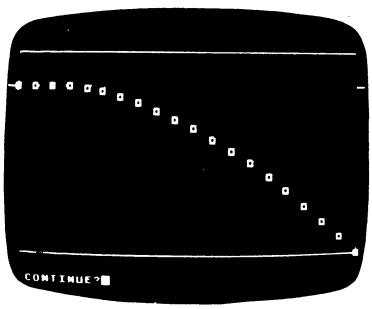
The format of the data storage is consistent with that used by REGRESSION I, REGRESSION II, TRANSFER FUNCTION ANALYZER, and HARMONIC ANALYZER. This permits the user to selectively filter data before processing by any of the above programs.

DIGITAL FILTER is extremely well documented with a 48 page manual which carefully describes the operation of the program as well as the supporting theory. The manual is sufficiently complete that it can be used in conjunction with the software to teach many of the principles involved in digital filtering.

Requires at least 16K of program memory (Atari version requires at least 24K).

Price: $49.95 Cassette
$53.95 Diskette
$56.45 8" CP/M Disk

Sample display (Atari):




COLLECTIONS

DYNACOMP offers reduced prices on the following collection:

FOURIER ANALYZER, TRANSFER FUNCTION ANALYZER and HARMONIC ANALYZER are available for:

$61.95 (3 Cassettes)
$73.95 (3 Diskettes)
$79.95 (3 8" Disks)

## ELECTRICAL ENGINEERING TUTORIALS

(Apple only)

DYNACOMP has several education programs designed for electrical engineers. See the EDUCATION section for:

FAST FOURIER TRANSFORM TUTORIAL
DIGITAL FILTER DESIGN TUTORIAL
Z-TRANSFORM TUTORIAL
S-PLANE TUTORIAL

## MATCHNET
(TRS-80 only)

MATCHNET is designed for use by the practicing engineer or scientist, the ham experimenter and the advanced student. It does not require any background in computer programming. If you can turn on the computer, you know enough.

Choosing and optimizing an impedance matching network is a tedious exercise at best and fraught with opportunities to err! The usual methods depend on charts, approximations and intuition, and are very time consuming. The computer is clearly the proper weapon for attacking the iterative calculations involved in impedance matching. The component values for twelve networks can be displayed a few seconds after entering the source and load data. Then the frequency response curves can be examined – a new one every few seconds. The programmable calculator pales by comparison!!

Other options include facilities for entering/editing input data, changing frequency and/or decibel scales, and creating hardcopy.

Specifications

Approximate Execution Time:

| | |
|---|---|
| Network Analysis | – 6 sec. |
| Frequency Analysis | – 15 sec. |
| Frequency Graphics | – 5 sec. |
| Hard Copy Graphics | – 80 sec. |

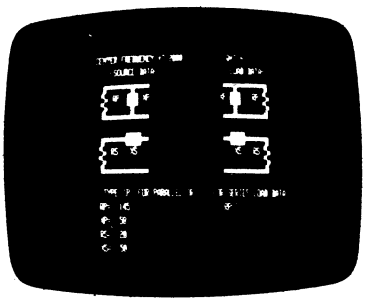
Inputs Required:
- Source Resistance
- Source Reactance
- Load Resistance
- Load Reactance
- Network Q (optional)
- Center Frequency (optional)

Outputs: Screen:
- Component values for 12 networks which match specified load to specified source.
- Tabulation of frequency response and refection coefficients of any of the 12 networks.
- Graphic display.

If you ever need to design a matching network, use MATCHNET.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



## FILTER ANALYSIS
(Apple only)

FILTER ANALYSIS calculates the effective attenuation of a electrical filter composed of passive elements. The effective attenuation is the ratio (in decibels) of the power delivered (to the load) to the maximum power available (from the source). For the case of lossless filter components (i.e., perfect inductors and capacitors), this ratio is the frequency response of the filter.

For example, a typical filter circuit which might be examined by FILTER ANALYSIS is shown below. As you can see, there is considerable flexability in dealing with serial/parallel components as well as multiple stages.

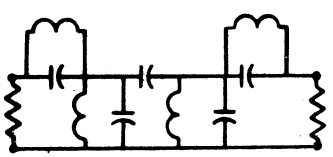
The results of the analysis are available in several forms, including a tabular display of the attenuation and reflection coefficients, and a graphical display of the attenuation in decibels versus log-frequency (see below).

FILTER ANALYSIS is written in Applesoft BASIC, but emulates its own very friendly language. The commands are T (text for comments), E (enter data), R (run analysis), C (change data), L (list circuit description), Q (quit) and P (plot).

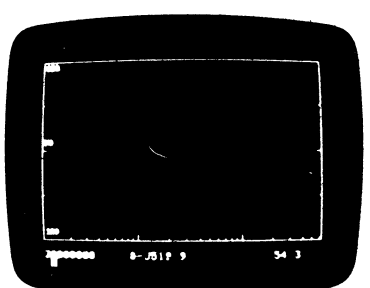
FILTER ANALYSIS is a very powerful tool for quickly and easily testing filter designs.

Price: $29.95 Cassette
$33.95 Diskette

Typical (though not practical!) circuit:



Sample display:



## SOFNET

(CP/M, IBM, TRS-80, and Apple only)

Liquid Pipeline Network Analysis
Apple description; TRS very similar.

SOFTNET is a general purpose liquid pipeline network analysis program designed for the Apple personal computer system. It is written in APPLESOFT basic with machine language subroutines for greater speed. The hardware requirements include a minimum of 48K memory, one disk drive, DOS 3.2 and an optional 80 column printer for permanent copy.

SOFTNET is a powerful modeling tool for system planning and analysis which lets you tackle virtually any type of network configuration. Network data files maybe created, edited and stored on diskette using the Apple's built-in APPLESOFT editing features. When executed, the input data file is interactively requested by the system. An internal data checker searches for data errors and omissions. Once verified, the program indexes all nodes and associated connectors and solves the series of flow equations by an interative link-node technique. Solution tolerance is set by the user. Once solved, results are displayed on the screen and, if desired, printed. Results can be saved for use in another simulation and you can play "what if" by inputting new values, recalculating and then displaying the new results.

Network elements such as pipelines, pumping systems, valves, force mains and storage facilities can be specified to accurately represent the physical system being modeled.

SOFTNET can treat:
- Up to 150 system nodes and determine pressure and external flows at each point.
- Flow through up to 150 connecting elements.
- Hazen Williams equation.
- Mannings equation.
- Pumping systems.
- Check valves and other head loss elements.
- Up to 10 pumping stations including pump characteristics.

Requires 48K. Price: $129.95 Diskette

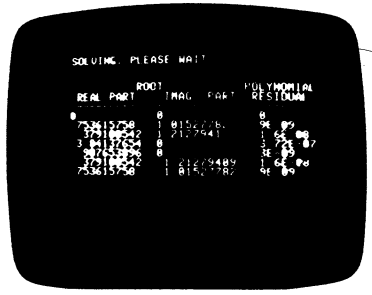
## ROOTS

(available for all computers)

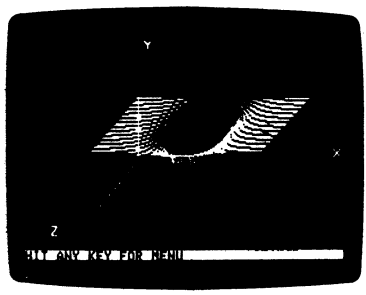
If you want to determine the zeroes of a polynomial having real coefficients, ROOTS is the program for the task. ROOTS employs a relatively little known algorithm described in the computer mathematics literature several years ago. This algorithm iteratively seeks all the roots simultaneously. The convergence is cubic (and therefore rapid) and very stable, requiring no explicit initial guesses from the user. Accuracy is usually within two digits of the precision of the BASIC employed. In addition to displaying the calculated solutions, the program also shows the results of substituting those values into the original polynomial. Convergence failure is highly unlikely and, if it occurs, it is generally limited to special multiple (M-2) roots. Any order polynomial may be treated.

Runs in 16K. Price: $15.95 Cassette
$19.95 Diskette
$22.45 8" CP/M Disk

Sample display (Apple)




Sample display (Surface Plotter):




## MATH PACK

(Apple and IBM only)

If you're a student, teacher, mathematician, engineer or scientist in search of mathematical analysis routines, this package is for you. Elegantly written and user-oriented, this group of four programs makes maximal use of HI-Resolution plotting capabilities to augment math routines and display the results. The program contains a master menu to run any one of the following programs:

**Statistical Analysis:** A general purpose menu-driven statistics package that allows the user to analyze numerical data bases. The program computes and displays:

- Simple Linear Regression Line
- Mean
- SLR Equation Co-efficient
- Standard Deviation
- Frequency Distribution Plot
- Data Points

Included are routines for disk data file I/O, editing and printer output.

**Numerical Analysis:** This program will plot any two variable equations that you can write using standard Basic arithmetic functions. The program will plot the equation, its integral, and its derivative. It will determine and list roots, maxima or minima encountered and the integral value over the plot range.

**Matrix:** This program allows you to solve for the inverse, determinant and solution matrix for linear systems of up to 54 equations in 54 unknowns. It uses standard Gauss elimination with pivoting for maximum efficiency. Included are standard data-base management routines for editing, disk I/O and printer reports of both data and results.

**3D Surface Plotter:** This program does general purpose 3-D plotting of any 3 variable equations that you can write using standard BASIC arithmetic functions. It performs either hidden-line or transparent plots. Disk I/O routines are included for saving plot pictures on diskette.

The programs are all menu-driven and employ extensive prompting for easy use. The entire series of programs is supplied on a single disk together with demos and an instruction manual.

Requires 48K (Apple), 64K (IBM).

Price: $49.95 Diskette

## SECTION PROPERTIES
(Atari only)

Structural/mechanical design and stress analysis often requires calculation of the strength and stiffness properties of various structural cross sections to determine the capability of the sections to withstand axial, bending or torsional loads. SECTION PROPERTIES greatly speeds and simplifies the task of determining these properties, particularly for complicated or irregular sections.

This program is entirely menu driven and self prompting, with extensive error trapping and correcting to help prevent the necessity of restarts. The sections are presented graphically on the screen to increase usability and reduce the possibility of incorrectly defined shapes.

SECTION PROPERTIES provides solutions for cross section area, location of section centroid, moment of inertia, section modulus, radius of gyration, product of inertia, polar moment of inertia, principal major and minor moments of inertia and the angle of the principal major axis. Printer options allow the user to obtain a printer trace of the input data, a screen dump of the plotted section or a hard copy of the results. Includes 45 page manual. Requires 24K (cassette) or 32K (disk). Printer optional.

Price: $39.95 Cassette
$43.95 Diskette

## ENGINEERING COLLECTION #1
(CP/M and IBM only)

Here is a collection of ten programs for the Osborne computer which should be included in any engineer's library software:

1. ANTENNA PLOT: You may specify up to 100 array elements and their locations.
2. BODE PLOT: You specify the poles and zeroes, the program plots and lists the response.
3. CONVOLUTION: Input two waveforms and get the convolution, both plotted and listed.
4. FOURIER PLOT: Produces the discrete Fourier transform of a set of data. Plots and lists. You may also specify the number of harmonics to be computed, and reconstruct using these harmonics.
5. NUMBER CONVERSION: Converts between decimal, binary, octal and hexadecimal.
6. REACTOR SIMULATION: Based on reactor kinetics equations found in NUCLEAR ENGINEERING HANDBOOK (by McGraw-Hill).
7. CONTROL SYSTEM SIMULATION: Simulates a second order closed loop control system. Responses may be listed, saved and plotted.
8. SPLOT: Plots sets of X, Y data on 80 column printer.
9. PPLOT: Similar to SPLOT, but for dot matrix MX-80.
10. SCPLOT: Similar to SPLOT, but plots on screen.

Each of these programs may be called from the main menu provided on the DYNACOMP diskette, or each may be incorporated into you own BASIC programs (they are written in BASIC). Even if you do not have an immediate application, this collection has considerable *education* value. Sample data sets are included. Supplied with 62 page manual showing examples and listings. Price: $39.95 Diskette
$42.45 Disk

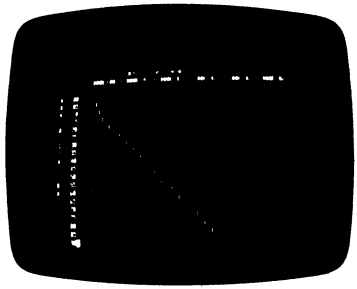
## BEAM DEFLECTION
(Available for all computers)
disk/diskette only

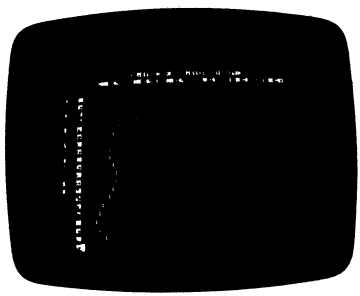
BEAM DEFLECTION is the first in DYNACOMP's new series of structural analysis software packages. It consists of two programs. The first program permits the development of data files which describe the problem. For example, the ends of the beam may be pinned, clamped or free. The beam may be uniformly supported by an elastic bed, or held up by springs variously placed and having differing spring constants. The elasticity and cross section of the beam may vary along its length. The load may be uniformly distributed or it may include discrete forces. The beam may be pinned at various points along its length. And so on. All this information may be easily entered and edited using the data input program.

Following this the analysis program is called. The calculated results are the stress and deflections of the beam, both in numerical and graphic form. Since the input data is saved, cases may be easily re-run with modification, thereby permitting iterative design.

The documentation which comes with BEAM DEFLECTION clearly shows how to use the software. In addition, three text problems are described and demonstrated to ensure that you understand how to use the program. Also, helpful theoretical information is supplied in the appendix.

Price: $39.95 Diskette
$42.45 Disk





## BEAM DEFLECTION NOTICE

If you have received your copy of BEAM DEFLECTION prior to June 15, 1984, please note that some improvements have been made to the interpolation routine. You may obtain an updated copy by returning your original DYNACOMP diskette with a check (or MasterCard/Visa number) for $5.00 to cover postage and handling.

## HEAT LOSS
(Atari, CP/M, and IBM only)

HEAT LOSS uses ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) methods to calculate the heat losses through various parts of a building: roof, walls, doors, etc. Window, door, and lower areas are automatically subtracted from wall areas, and the heat loss for each element is calculated and summed for room and building totals. Room infiltration and ventilation loads are also calculated, along with the overall building heat-loss coefficients required by some state energy codes.

HEAT LOSS is intended to be used by heating design engineers, building contractors, architects and engineering students. While most aspects of the design process are explained, additional information from a source such as the ASHRAE "Handbook of Fundamentals" would be required for actual design work. For example, "R" values are needed.

HEAT LOSS provides for storing and retrieving data, reviewing and changing of individual rooms or room elements, and printing out results. It will handle up to two hundred rooms on a 48K machine. Printer output is very general — all 40-column and 80-column printers will work.

Requires at least 32K.

Price: $39.95 Diskette
$42.45 8" CP/M Disk

NOTE: CP/M version requires an 8080, 8085 or Z80 microprocessor. MBASIC *not* required.

## PIPELINE PRESSURE LOSS
(Atari and CP/M only)

PRESSURE LOSS calculates the pressure head loss in simple piping systems, such as found in plumbing and heating. The longest path (greatest resistance) is selected, and the corresponding head loss calculated. This gives the greatest head a pump has to deliver to supply the demand.

In operation you select the material (copper, PVC, or schedule-40 steel) and the max/min unit head loss (default is the ASHRAE recommended 100-500 milli-inches/ft.). You also supply the initial flow, the number of elbows, gates, globe and check valves, line flow and branch flow tee's. The program then determines the proper pipe diameter, calcualtes the unit head loss and total loss.

At the beginning of each segment you can add or delete from the flow, or specify a direct loss (e.g., the rated drop through a coil). The program uses data from ASHRAE charts and employs the system head curve relationship to determine the loss for trial pipe diameters until a loss in the specified range is found.

The program is accurate in the loss range of 100-500 milli-inches/ft., and can be used outside that range with less accuracy.

Requires 48K.

Price: $39.95 Diskette
$42.45 8" CP/M Disk

## DIGITAL IMAGE PROCESSING
(Apple Only)

DIGITAL IMAGE PROCESSING (DIP) is a must for any scientist, engineer, student, photographer, or experimenter interested in the digital representation of images. This two-diskette package allows you to digitally manipulate images (15 samples are supplied, including pictures of Lincoln, Kirchoff, and Saturn) to remove interference, noise, improve contrast, sharpen, and generally filter images.

The manual is broken into two main sections. The first describes the theory associated with digital filtering, including histogram correction. The second half of the manual deals with the HI-RES graphics examples and routines which demonstrate the various ways in which an image can be analyzed and altered.

DIP is HI-RES graphics and menu-oriented. Images (e.g. before and after) can be displayed on a standard TV screen or an oscilloscope. (Optional: The schematic for a simple oscilloscope interface to fit in Slot #3 is given. It uses three Analog Devices AD558 D/A converters). All images can be stored and recalled individually for later viewing.

The experiment menu includes processing examples (you run them with your own parameters) for over- or under-exposure (you will see how effective histogram correction is for this!), noise, interference, double exposure (you are given two different double-exposure pictures to try to rescue) and poor contrast.

Each image may be manipulated in the following ways:

1. Gamma correction (you choose the gamma).
2. Inversion (good for making slides).
3. Histogram correction (very powerful).
4. User-supplied non-linear contrast correction (you supply the table look-up).
5. Digital filtered (you supply the filter function).

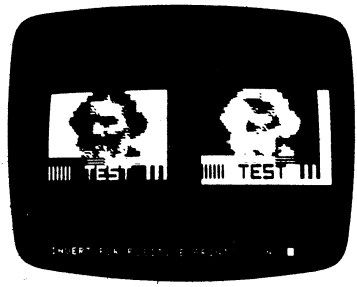
The fifth mode has several alternatives. You may filter in the X, Y, or X/Y directions using moving average filtering and combined thresholding and gradient enhancement ("unsharp masking" in photography). You may also specify the filter in terms of poles and zeroes on the transfer function (see also the EDUCATION section under Z-TRANSFORM TUTORIAL, DIGITAL FILTER DESIGN TUTORIAL, and BILINEAR TRANSFORM TUTORIAL).

The manual concludes with a list of experiments to try in order to get a "feel" for the utility of the many tools at your disposal. Learn by doing.

Requires 48K, one disk drive. Oscilloscope optional (requires interface).

Price: $59.95 Two Diskettes

Sample display:



## CALFEX and CALFEX G/T
(Apple and IBM)

Forget your calculator, CALFEX and CALFEX G/T are here! They form a general-purpose menu-driven equation processor for engineering and scientific analysis. Now you can do calculations that used to take hours in only minutes. CALFEX does for engineers what the popular spreadsheet programs do for businessmen. You provide the equations and CALFEX does the rest. Labels or names for variables are easily included. Up to 10 sets of values for the independent variables can be saved.

From the menu page showing all the inputs, any value may be easily changed by moving the cursor. One keystroke then displays all the calculated answers. The powerful *Variable Exchange* feature lets you force an answer to a given value by varying any input, without rewriting anything. It uses an iteration process that also lets you solve for variables which are difficult or impossible to solve for analytically. For example, you might *specify* the values of certain *dependent* variables to determine the independent variable (specify deflection and find force).

ADDITIONAL FEATURES:

- Graphs and Tables: CALFEX G/T contains built-in graphics to allow plots of your results with a minimum of effort. Includes autoscaling if desired and tables of values for the plotted points. You can also plot up to 3 lines on a graph by letting a third variable take on 3 distinct values. Works with any printer. Choice of linear, log, or semilog plots.
- Maxima and Minima. Can be found automatically.
- Simultaneous equations. Up to 10.
- Numerical Integration.
- Array or Simple Variables. Up to 120 inputs and 120 outputs.
- Access to BASIC. Normally you just add your equations but, if needed, you have full access to BASIC programming, including reading or saving data files, adding your special programming, etc.
- Organized and Documented Programs. Other users can now follow your programs.

CALFEX is easy to learn, even if you have never used a personal computer. It is extremely useful for design optimization modeling. CALFEX is supplied with a thorough manual and demos. Also included is CALFEX G/T which is described as follows.

CALFEX G/T expands the capabilities of the basic CALFEX program. With graphs you can easily see the general trend of how one variable depends on another. Then you can get a table of the exact values for all the plotted points if desired. If, for example, you are trying to optimize a design, the graph shows the trend and the table gives the values so you can quickly get a feel for how the variables interact. The CALFEX G/T package speeds up the process of finding useful solutions to your problems.

- EASY TO USE: The graph is automatically scaled and labeled with a minimum number of inputs from you. The whole program is designed for ease of use.
- LINEAR, LOG, OR SEMILOG PLOTS are easily created by simply choosing the scale for each axis.
- PRINTS TABLES OF THE RESULTS: In addition to graphs, you can now get tables of results so you can see exactly how variables interact. The table will list the exact values of plotted points.
- PARAMETRIC GRAPHS: You can let a third variable take on three different values and plot the three curves on one graph.

Requires 48K (Apple), 96K (IBM).

Price: $289.95 Diskette
(CALFEX and CALFEX G/T package)

Sample Printouts:

```
                UDP NAME: TRAJECTORY/4/4/S
                INPUT SET #: 1
V Y3-
E   !
R  L!
T  I!
.  N!              + + +
   E!          +           +
   A!       +
P  R!                      +
O   !    +
S Y2-                         +
I   !
T  V!  +
I  :!                            +
O  M!
N  2! +
,   !
    !                               +
F   !
T Y1+---------------!---------------!
   X1        V:A0  X2      LINEAR  X3
          HORIZ. POSITION, FT
Y3=5000                  X3=30000
Y2=2500                  X2=15000
Y1=0                     X1=0
```

```
          UDP NAME: TRAJECTORY/4/4/S
          INPUT SET #: 1
V:A0                      V:M2
HORIZ. POSITION, FT  VERT.  POSITION, FT
0                         0
2000                      1069.36602
4000                      1968.06547
6000                      2696.09834
8000                      3253.46462
10000                     3640.16433
12000                     3856.19745
14000                     3901.564
16000                     3776.26396
18000                     3480.29735
20000                     3013.66415
22000                     2376.36439
24000                     1568.39803
26000                     589.765102
```

Sample variable exchange problem:

$$X = \frac{aY^4 + Y \cos (Y + Z)}{1 - bY^3 \log (Z/Y)}$$

You can solve for X, Y, or Z given the other two.

## HINT
(NEC)

When given a choice to run under NBASIC or CP/M and MBASIC, choose the latter; you will have more free memory to work in.

## HINT
(Atari disk)

ERROR 162: You have filled up the disk (this sometimes happens with BRIDGE MASTER). Delete some old data files to make more room.

## MECHANICAL ENGINEERING #1

(Apple and IBM)

**A collection of programs for use with CALFEX**

This is a collection of mechanical engineering programs for use with the general purpose analysis program, CALFEX.

These programs can save you considerable time and effort in analyzing problems. They are truly a bargain on a cost-per-program basis and, since all utilize the basic CALFEX program, the format is uniform and easily understood. The programs are a valuable addition to any mechanical engineer's library.

These programs were written by professional engineers for real-world problem solving and design optimizing. Some of the solutions presented here will not be found elsewhere. Most are adapted from well known problems. They are sufficiently documented so that you can check the underlying theory if necessary, or alter it to suit special purposes. All are written in BASIC and program printouts are included to facilitate detailed review.

All allow the powerful Exchange Variable option, so you can interchange a dependent variable for an independent variable to reverse their roles.

CONTENTS

**Applied Math**

FOURIER SERIES for up to 59 pairs of input values, resulting in up to 59 coefficients of sine and cosine terms. A second program does the same job and, in addition, calculates how well the resulting Fourier Series fits the given data.

**Stress and Strain**

BEAMS WITH TRAVERSE LOADS: This program contains all the 6 combinations of simple beam-end conditions and 7 kinds of traverse loads, moments, and imposed distortions of Table 3 of *Formulas for Stress and Strain*, 5th Edition, Roark and Young (McGraw-Hill Book Co.). Up to 37 individual loads, moments, and distortions at 37 locations may be simultaneously imposed and the program sums up the result. The CALFEX exchange variable feature allows maxima and minima to be found for stress, moment, deflection, etc.

HELICAL SPRINGS, GENERAL: This program calculates axial, torsional, and lateral bending stiffness and resonant frequencies, along with the usual spring parameters, for round or rectangular wire. Some of these results have not been previously available. In particular, buckling loads are calculated by a more complete theory than has been generally used.

HELICAL SPRINGS, SIMPLE: This is similar to the above but omits a number of the more usual outputs. It runs faster and is a little easier to use, when it is adequate.

HELICAL SPRINGS, NONLINEAR: This follows the special theory reviewed on pages 320 and 321 of the Roark and Young book, giving a more precise relation between load and axial displacement.

BEAMS WITH END LOADS AND SIDE LOADS: This is capable of almost exactly the same results as Beams With Traverse Loads but with end loads of tension or compression. It contains the essential parts of tables 10 and 11 of the Roark and Young book for all 6 beam types. For any one end load, up to 55 traverse loads can be applied, and the results are summed up.

**Fluid Flow**

DUCT FLOW calculates pressure drop, mean velocity, Reynold's Number, etc., for incompressible flow for round or rectangular ducts or pipes. For air and water, viscosity and density are calculated automatically if you enter the temperature and pressure. Roughness is one of the inputs.

**Dynamics**

DISK-SHAFT VIBRATIONS: Resonant frequencies are computed for a system of disks and shafts, for as few as 2 disks and 1 connecting shaft or as many as 59 disks and 58 shafts. For a given driving frequency and amplitude on one end, the amplitudes of response of each disk may also be determined.

IBM version requires 96K; Apple version requires 48K. Needs CALFEX to operate.

Price: $199.95 Diskette

## DISKETTE RECOMMENDATIONS

We have noticed that some brands of diskettes work better than others, seemingly independent of the manufacturer's advertising or pricing (whether they are guaranteed for 90 days, one year, or five years apparently makes no difference in the failure rate). All we can say is that DYNACOMP uses (and sells) only those diskettes which it has found to be most reliable, given some cost constraints. There are some brands which are very high quality and very expensive, but the difference in perceived reliability may not be worth the difference in price.

However, we *do not* recommend that single-sided diskettes be used (in single-sided drives) on the second side by cutting an extra notch. Although many people have done this with some success, they are taking a chance. The problem is *not* "print through"; the diskette is more than thick enough to prevent that. The problem *is not* using a side that has not been verified; you can do that verification yourself. The problem *is* the direction of disk rotation. When you remove the diskette and flip it over, you reverse the direction of rotation. There two things wrong with doing this.

First, the diskettes are polished by the manufacturer in one direction, the direction used in your drive in the normal mode. When the diskette is flipped, it runs the opposite way. Consider your hand to be the head, and a cat to be the diskette. When you brush the cat one way, your hand glides over the fur smoothly. When you brush it in the opposite direction, the fur fluffs up and there is more resistance. Simply put, you run the danger of shortening the life of the "good side" of your diskette, as well as increasing head abrasion.

Second, the inside of the diskette contains a porous liner which picks up and traps dirt. Flipping the disk over and running it "backwards" may dislodge some of the debris, which may pass under the head or stick to it.

Therefore, although this is an unpopular view, DYNACOMP recommends that you do not try to save money by using the back side of the diskettes in single-sided disk drives. Diskettes are inexpensive enough (see DYNACOMP's prices!) that the risk is not worth the anticipated savings.

## THE MATH MASTER SERIES
(Apple, IBM, TRS-80)

We learned a lesson from DYNACOMP's BASIC SCIENTIFIC SUBROUTINES (BSS) series: People want to extend the math capabilities of their machines. With BSS you can select any of a large number of subroutines written in BASIC and append them on to your own programs. Now a few of the more popular routines have been converted to machine language and have been included in BASIC as special statements. For example:

100 CMD MAT A = INV(B)

is a statement in the MATRIX MASTER enhancement of BASIC which calculates the inverse of matrix B and puts it in matrix A. As you can see, the program statement is ***very*** simple and easy to use. Also, the calculation is ***fast.***

THE MATH MASTER SERIES comes in several modules:
MATH MASTER EXECUTIVE
MATRIX MASTER
POLY MASTER
POLY ROOT MASTER
FAST FOURIER TRANSFORM MASTER

All but the EXECUTIVE are free-standing modules, that is, you need nothing but that module and BASIC to implement the enhancement. However, if you want to use two or more modules simultaneously, the MATH MASTER EXECUTIVE is also required to coordinate the modules.

Note: Modules are read in only when a ***different*** module is called. Ten matrix calculations in a row result in only one MATH MASTER module load.

Each module is described below in some detail. As you will see, you can greatly enhance the capabilities of your BASIC with MATH MASTER modules.

## MATH MASTER EXECUTIVE
(Apple, IBM and TRS-80 only)

The MATH MASTER EXECUTIVE automatically loads in MATH MASTER programs as they are needed. For example, suppose a program contains these two statements:

60 CMD MAT A = B+C
70 CMD POLY R =S+T

First, MATRIX MASTER would be automatically and quickly loaded into RAM and executed to give the sum of matrices B and C in matrix A. Then POLY MASTER would be automatically loaded into RAM and executed to give the sum of polynomial coefficient vectors S and T in vector R. The only effort required on the part of the user is that of making sure that POLY/EXC and MAT/EXC reside on a disk in one of the disk drives.

Price: $19.95 Diskette

Note: 128K RAM (or more) needed for the IBM version of MATH MASTER EXECUTIVE.

## MATRIX MASTER
(Apple, IBM, and TRS-80 only)

MATRIX MASTER ***greatly*** simplifies and ***speeds up*** those very time-consuming matrix operations which are often encountered. For example, a 20 by 20 matrix can be inverted in only 15 seconds (IBM version; single precision). That's fast! The typical BASIC command would be:

100 CMD MAT A = B+C

The quotations supported are addition, subtraction, multiplication, transportation, inversion, scalar operations, identity matrix creation, and fast storage and retrieval. Although available in single- and double-precision versions, double precision is recommended for matrix inversion.

Price: $29.95 Diskette (Single Precision)
$37.95 Diskette (Double Precision*)
* Not available for Apple

## FAST FOURIER TRANSFORM MASTER
(Apple, IBM, and TRS-80 only)

FFT MASTER is presently the most popular of the MATH MASTER series because of the need for a truly ***fast*** FFT and one that has the features this has. For speed, consider the following: 26 seconds (IBM version) for a 1024-point single-precision real transform!

Two versions of FFT MASTER are available:

- SINGLE PRECISION for "run of the mill" analysis.
- DOUBLE PRECISION for exacting analysis.

The size of the array processed is limited only by available RAM. All of the transforms are performed "in place". This saves memory. And all of the transforms can be performed with Hanning windowing. Also, inverse transforms can be computed.

Here are some examples of the command formats:

100 CMD FFT A REAL

The N elements in A(I) are taken to be real and the complex transform is returned in A(I): A(0) and A(1) are the real and imaginary parts of the first of the N/2 output points.

200 CMD FFT A INVERSE

The inverse transform of the ***complex*** array A(I) is returned.

300 CMD FFT A REAL HANNING

Modifiers can be compounded. Here the real array A(I) is windowed before being transformed.

300 CMD FFT A MAG(B)

The magnitude of the transform of A(I) is returned in B(I).

400 CMD FFT A PHASE(C)

The phase (in radians) of the transform of A(I) is returned in B(I).

There are also utilities for quickly storing and retrieving data.

As usual with FFT algorithms, FFT MASTER is limited to $2^m$ data points.

Price: $49.95 Diskette (Single Precision)
$57.95 Diskette (Double Precision*)

* Not available for the Apple

## POLY ROOT MASTER

(Apple, IBM, and TRS-80 only)

POLY ROOT MASTER allows you to determine quickly and easily the roots of polynomials using a simple command structure:

100 CMD ROOT A = R(B) AND I(C) USING(D)

when A is the polynomial array, B is the real root vector, C is the imaginary root vector, and D is a dummy work array. For example, B(0) and C(0) are the real and imaginary parts of the first root found, etc. Simple and fast.

Price: $17.95 Diskette (Single Precision)
$25.95 Diskette (Double Precision*)
* Double Precision not available for Apple

## POLYMASTER

(Apple, IBM and TRS-80 only)

POLYMASTER allows polynomial operations to be quickly and easily accomplished using symbolic statements like:

100 CMD POLY A = B+C

The operations available are +, −, *, /, greatest common divisor, integral, evaluation, and setting one polynomial equal to another. Also included is a fast disk storage and retrieval utility.

Price: $17.95 Diskette (Single Precision)
$25.95 Diskette (Double Precision*)
* Double Precision not available for Apple

## BASIC SCIENTIFIC SUBROUTINES VOLUME 3, CHAPTER II

## BASIC SORTING SUBROUTINES

(Available for all computers except Atari)

There have been so many requests for the third volume of the BASIC SCIENTIFIC SUBROUTINES series that the author has decided to supply the chapters and sections as they are finalized. The entire book has been written, but each chapter is being reworked to ensure compatibility with Volumes 1 and 2, as well as with the other Chapters in Volume 3.

Volume 3 is basically a text dealing with statistical subroutines, including data handling. The second chapter is concerned with numeric and alphanumeric ("alphabetical") sorting. This topic was chosen for an early chapter because data usually has to be ranked, ordered or separated before any quantitative analysis can ensue.

Seven (actually, fourteen; seven for numeric arrays; seven for alphanumeric arrays) sorting routines are discussed:

1. The bubble sort
2. The insertion sort
3. The Shell sort
4. The Shell-Metzner sort
5. The Butterfly-Hart sort
6. The heap sort
7. The quick sort

Each has advantages and disadvantages in terms of speed under certain sorting conditions, code length, array memory requirements, and equal element exchanges (a very important property which is usually overlooked).

Also included in this chapter is a program for *accurately* calculating moments (e.g. mean, variance).

The subroutines are presented in the same REMarked format as is the pattern in the other volumes. There are demonstration programs for showing how they operate, timing comparisons, input/output descriptions, variables list, etc. In other words, these programs are fully commented and documented in the same way which has made Volumes 1 and 2 so popular.

The package is composed of the disk(ette) containing the subroutines and demonstration programs, and a preprint of Volume 3, Chapter II (over 160 pages).

Price: $29.95 Diskette
$32.45 8-inch CP/M Disk

**Watch the DYNACOMP catalog** for announcements concerning more chapters. Please do not call for progress reports. We appreciate your interest, but it does get monotonous (for us).

## THE MATH MASTER COLLECTIONS

The entire MATH MASTER COLLECTION described above, including THE MATH MASTER EXECUTIVE, may be purchased in one of the following collections:

Single Precision: $99.95
Double Precision*: $119.95
* Double Precision is not available for the Apple

## DIGITAL IMAGE PROCESSING II

(Apple only)

DIGITAL IMAGE PROCESSING II (DIP II) is a follow-up to the first package, DIP. It provides a means for converting sampled 8192 pixel, seven gray-level images into 2048 pixel video signals. The HIRES picture can be displayed on the screen, with a representation of the video signal shown as an insert, or sent to an oscilloscope (see DIP description). The diskette includes four HIRES pictures on diskette.

Although DIP II can be operated by itself, it is meant to be used in conjunction with DIP.

Price: $15.95

Sample display:

## DYNACOMP PRODUCT AVAILABILITY

DYNACOMP products are also distributed through more than 500 stores in the United States, Canada, Europe, Australia, New Zealand, etc. Why not ask *your* dealer for DYNACOMP software?

## DIFFERENTIAL EQUATIONS

(CP/M and IBM only)

DIFFERENTIAL EQUATIONS is a series of programs which yield numerical solutions to ordinary differential equations given suitable initial conditions. Only two restrictions are placed on the differential equation being solved. First, it must be explicitly expressable in some sequence of the standard BASIC mathematical operators: +, −, *, /, EXP, LOG, or the trigonometric functions SIN, COS, and ATN (or ATAN). Second, enough initial conditions must be provided to make the solution unique — that is, for an equation of order N, N simultaneous (at the same value of the independent variable) initial conditions must be known. Several different methods of solution can be chosen from, including Euler, Improved Euler, and Runge-Kutta techniques. An optional extrapolation routine provides improved accuracy for any data obtained. The results of any solution may also be plotted if desired. Output to a line printer is also supported.

Price: $19.95 Diskette
$22.45 8" CP/M Disk

## STATE VARIABLES

(CP/M and IBM only)

STATE VARIABLES is designed to solve systems of ordinary differential equations (up to ten) which include a forcing function. For example, a network of RLC elements subjected to a varying input voltage can be easily analyzed. You may choose five types of forcing functions: a constant, ramp, step, sine wave, or user-defined function. The program then solves the problem and both prints and plots the resulting solutions (including derivatives). STATE VARIABLES is a very nice tool. Requires 48K, printer is optional.

Price: $29.95 Diskette
$32.45 8" CP/M Disk

## ANALOG

(CP/M and IBM only)

ANALOG simulates the operation of an analog computer system on an 8080, 8085 or Z80 microprocessor.

Distinct advantages over an analog computer can be provided by using the microcomputer for continuous system simulation work. The output can be made directly available on hard copy. The configuration can be readily modified and a hard-copy record of all configurations can be maintained. The results are generally obtained more rapidly and less expensively than on an analog computer.

In ANALOG, the normal analog computer patch panel is simulated by specifying the interconnections between the 32 types of computational blocks available in this program. Through the use of the appropriate combination of these blocks, the response of any time-dependent system can be determined.

The program sorts the configuration blocks into a logical order that is appropriate and therefore the sequence and numbering of the blocks in the configuration is of no significance. The program user may order and number his (or her) blocks in any fashion he (or she) desires. The user may select either the 2nd or 4th order Runge-Kutta technique.

Some of the outstanding features of ANALOG are:

- Interactive control
- Dynamic configuration modification
- Dynamic initial condition and parameter modification
- Large simulation capacity with 250 elements or blocks
- Graphic and/or Printed numerical output
- Runge-Kutta integration
- Dynamic selection of 2nd & 4th order integration
- Automatically scaled graphics
- Menu driven
- File output for use with other programs
- Configurations may be developed on line and saved in a file
- 32 block types available
- Dynamic help level control
- 14 Primary commands
- Function generators with dynamic control
- Input in upper or lower case
- Low-resolution graphics output on any CRT or printer
- Mnemonic commands
- Dynamic display of the Simulation Time

ANALOG is supplied with a detailed manual which includes examples. It requires an 8080, 8085 or Z80 CPU with 64K of RAM, one disk drive, and a printer (very useful) which will print 120 or more columns. MBASIC is *not* required.

Price: $ 99.95 Diskette
$102.45 8" CP/M Disk

## RADIO HAM ATLAS

(Commodore 64 only)

If you are a ham radio operator or a short wave enthusiast, this is *your* program! If you don't have a Commodore 64, you may want to get one just to use RADIO HAM ATLAS.

In a nutshell, here are RHA's features:

- Full screen world map
- Search by call sign, city, or country
- 600 world-wide locations
- Beam heading, time of day, distance calculated

In more detail:

1. If you hear a call sign, you can enter the prefix of the call. The computer will search for a match (or the closest fits) and give the city, country, beam heading, time of day, and distance.

2. If you hear the city, just type it in and a search is made for a closest fit. You will then be given the information above. Same for a country search.

3. Input a ship's coordinates, and you get the beam heading.

4. You can set the time on your screen and keep track of how long you have been at your set.

5. You can shoot bearings from another QTH (location).

6. You can see the last location found on the world map (flashing spot).

RHA is professionally written and the documentation is clear and friendly.

Price: $39.95 Cassette
$43.95 Diskette

## BASIC SCIENTIFIC SUBROUTINES
### VOLUME I
(available for all computers)

BASIC SCIENTIFIC SUBROUTINES, VOLUME I by F. Ruckdeschel (published by BYTE/McGraw-Hill; see the January 1981 issue of BYTE Magazine, page 173) is the first in a series of books designed to provide microcomputer users with scientific subroutines written in BASIC. These subroutines have been designed to facilitate the application of microcomputers to scientific tasks which have previously been largely in the domain of the large timeshare mainframe computers.

Through arrangements with the author and BYTE/McGraw-Hill, DYNACOMP has become the exclusive distributor of three software packages keyed to the above text. Each package includes programs organized by chapter and accessed/demonstrated by a special menu program written especially for DYNACOMP. Unlike other software packages commercially available which are keyed to texts, you do not have to search the tape (diskette or disk) to load a particular program. They are all loaded in one step and are called according to the menu selection. This makes life much easier for the user.

Because of the total length of the software listed in the text (greater than 33 kilobytes), three collections have been organized. Each collection will run in 16K of program memory space (Atari requires 32–48K).

Collection #1:

Chapter 2 – Alphanumeric Data Plotting
- Equally Spaced Data
- Arbitrarily Spaced Data

Chapter 3 – Complex Variables
- Polar Coordinate Conversion
- Addition, Subtraction, Multiplication, Division
- Powers and Roots
- Spherical Coordinate Conversion

Collection #2:

Chapter 4 – Vector and Matrix Operations
- N-vector Addition, Subtraction, Multiplication (dot and cross products)
- N-vector Lengths
- Angles Between Vectors
- Matrix Addition, Subtraction, Multiplication, Transposition, etc.
- Row Operations
- Cofactors, Determinants
- Inversion
- Eigenvalues
- Exponentiation

Collection #3:

Chapter 5 – Random Number Generators
- Uniform, Normal, Poisson, Binomial
- Exponential, Fermi, Couchy, Gamma, Beta
- Weibull

Chapter 6 – Series Approximations
- Sine, Cosine, Arctangent
- Natural, Base-10 Exponent and Logarithm

Price: $16.95 per collection (Cassette)
$20.95 per collection (Diskette)
$23.45 per collection (8" Disk)

Accompanying each collection is documentation which describes how to use the associated menu program. Detailed descriptions of input/output parameters and the algorithms employed in the subroutines are to be found in the text BASIC Scientific Subroutines, Volume I (316 pages) which DYNACOMP also distributes ($27.95 plus 75¢ extra for postage and handling). The three collections may be purchased for a combined price of $44.95 (three cassettes), $53.95 (3 diskettes) or $59.95 (3 disks).

See the reviews of BASIC Scientific Subroutines appearing in Kilobaud and Dr. Dobbs.

## CELESTIAL·BASIC
(Apple diskette only)

Twenty-three programs on two diskettes provide amateur and armchair astronomers and students with important aids to observing and understanding the motions, apparitions, and configurations of the stars and planets, the Sun and the Moon. With these programs you can quickly find planetary positions, rising and setting times of the planets and of the Sun and Moon for any locality worldwide, at any time, on any date. The programs also convert star times to local times and vice versa, tell you when the next lunar eclipse will occur, determine when Mars will next be in opposition, and how Venus and Mercury are placed for observation. You can see how the stars and planets appear when viewed from Antarctica, or follow the motion of the Midnight Sun over the oil fields of Alaska's North Slope. Tutorials help you recognize constellations and their brightest stars. A program provides the configurations of Jupiter's Galilean satelites.

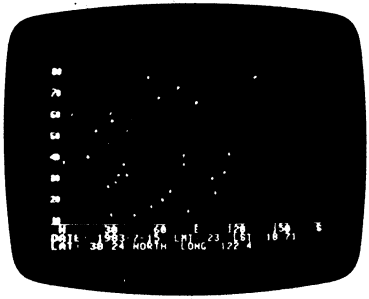
Educators will find the program useful to illustrate the dynamics of observational astronomy. Astrologers can use the programs to show the sky at times of birth. Armchair astronomers can view the night sky in the comfort of their own living rooms.

Written in Applesoft BASIC, the programs can easily be modified as part of an astronomy course to provide increased precision or to suit the special requirements of individual astronomers.

Keyed to the text "CELESTIAL BASIC" by E. Burgess, F.R.A.S. See aslo the Book Section.

Price: $49.95 for 2 Diskettes

Sample display:



## HINT
(North Star BASIC)

You do a CAT to get a catalog and get a string of lower case e's: You have a North Star CP/M format disk.

## BASIC SCIENTIFIC SUBROUTINES
### VOLUME II

(Available for all computers)

This is the second set in the continuing scientific software series (see the discussion associated with Volume I). This volume contains more than 120 kilobytes of excellent software. As with Volume I, the software is divided up into collections, with each collection having its own menu program for calling up and demonstrating the subroutines. Each of the eight collections is keyed to a chapter in the book:

Chapter 1 – Least Squares Approximation

- First-Order Least Squares
- Second-Order Least Squares
- Nth-Order Least Squares
- Multidimensional Least Squares
- Least-Squares Fitting with Orthogonal Polynomials
- Iterated Regression
- Parametric Least Squares

Chapter 2 – Series Approximation Techniques

- Taylor Series and Horner's Rule
- Asymptotic Series
- The Bessel Function
- The Chi-Square Distribution Functions
- The Gamma Function
- The Error Function
- Chebyshev Polynomials
- Economization
- Polynomial Reversion
- Polynomial Inversion
- Shifting the Expansion Point
- Rational Polynomials
- Infinite Products
- Complex Series

Chapter 3 – Functional Approximations by Iteration and Recursion

- Roots of Iteration
- Tangent Iteration
- Acrtangent by Recursion
- Arcsine by Recursion
- Elliptic Integrals by Recursion
- Natural Logarithm by Recursion
- Bessel Functions by Recursion
- Orthogonal Polynomial Coefficients by Recursion

Chapter 4 – CORDIC Approximation Techniques and Alternatives

- The Trigonometric Functions
- Generating the T and P Coefficients
- The Inverse Trigonometric Functions
- The Exponential Function
- The Natural Logarithm Function
- The Hyperbolic Trigonometric Functions
- Inverse Hyperbolic Trigonometric Functions

Chapter 5 – Table Interpolation, Differentiation, and Integration

- Lagrange Interpolation
- Newton Divided-Differences Interpolation and Error Estimates
- Choosing the Table Values
- Semi-Spline Interpolation
- Calculating Derivatives from Tables
- Table Integration
- Interpolation and Integration of $2/\sqrt{\pi}\ e^{-x^2}$

Chapter 6 – Finding the Real Roots of Functions

- Gaining Preliminary Knowledge About the Roots of a Polynomial
- Interval Searches
- Successive Substitution
- Newton's Method
- The Secant and False Position Methods
- Aitken Acceleration
- Aitken-Steffenson Iteration
- Finding More Roots: Multiplicity
- Finding More Roots: Removal

Chapter 7 – Finding the Complex Roots of Functions

- Interval Search
- Newton's Method in the Complex Domain
- Mueller's Method in One Dimension
- Two-Dimensional form of Mueller's Method
- Mueller's Method in the complex Plane
- Representing Polynomials in the $u(x,y) + i\ v(x,y)$ Form and Removing Roots
- The Quadratic Formula
- Lin's Method
- Bairstow's Method

Chapter 8 – Optimization by Steepest Descent

- Steepest Descent with Functional Derivatives
- Steepest Descent with Approximate Derivatives

Price: $14.95 per collection (Cassette)
$18.95 per collection (Diskette)
$21.45 per collection (8" Disk)

Accompanying each collection is documentation which describes how to use the associated menu program. Detailed descriptions of the input/output parameters and the algorithms employed in the subroutines are to be found in the text BASIC Scientific Subroutines, Volume II (790 pages) which DYNACOMP also distributes ($29.95 plus $1.50 for postage and handling). The eight collections may be purchased for a combined price of $99.95 (eight cassettes), $129.95 (eight diskettes) or $144.95 (eight disks).

## LINEAR PROGRAMMER

(Available for all computers)

LINEAR PROGRAMMER is a mathematical program designed to solve the standard linear programming inequality problem $a_{1i}X_1 + a_{2i}X_2 + a_{3i}X_3 + \ldots + a_{ni} \leq b_i$ ($i = 1,2, \ldots m$). All linear programming inequalities can be put into this form, and solved by LINEAR PROGRAMMER. Further, if an answer does not exactly exist, the "nearest" solution will be found.

Data input is simple, and the method used is fast and efficient (the Khachian algorithm). LINEAR PROGRAMMER is written in BASIC and can even be incorporated into other linear programming software as a utility. Requires 16K.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 Disk

## HINT

(Osborne double-density)

BDOS ERROR: Are you trying to load a single-density disk on a double-density system? That does not always work!

## THE ADAM OSBORNE SOFTWARE COLLECTION

(Available for all comupters *except* Atari)

Here are four collections of programs keyed to the text *SOME COMMON BASIC PROGRAMS* published by Adam Osborne,(book written by Poole and Borchers). These collections received 10 (out of 10) ratings in our North Star Software Exchange listing. They have been translated to other machines covered by DYNACOMP and are an *absolutely excellent bargain.*

The DYNACOMP versions come with a master menu which allows you to easily choose the program desired, execute it, and return to the menu. The DYNACOMP versions have also been significantly *improved* and *corrected.* The programs are generally self-prompting. Although the documentation from DYNACOMP is sufficient for most applications, it is suggested that you obtain the associated Osborne book. This book is so popular that most computer stores carry it, or you may order directly from Osborne/McGraw-Hill.

The four sets are:

COLLECTION #1:

Price: $12.95 Diskette
$15.45 8-inch CPM Disk

SOME COMMON BASIC MATH PROGRAMS
DISK A

1. Greatest common divisor
2. Prime factors of intigers
3. Area of polygon
4. Parts of a triangle (radians)
5. Parts of a triangle (degrees)
6. Analysis of two vectors
7. Operations on two vectors
8. Angle conversions (degrees to radians)
9. Angle conversions (radians to degrees)
10. Coordinate conversion
11. Coordinate plot
12. Plot of polar equations
13. Plot of functions
14. Linear interpolation
15. Curvilinear interpolation

COLLECTION #2

Price: $12.95 Diskette
$15.95 8-inch CP/M Disk

SOME COMMON BASIC MATH PROGRAMS
DISK B

1. Integration — Simpson's rule
2. Integration — trapezoidal rule
3. Derivatives
4. Roots of equations (Newton half-interval)
5. Trigonometric polynomials
6. Simultaneous equations
7. Linear programming
8. Matrix operations

COLLECTION #3

Price: $12.95 Diskette
$15.45 8-inch CP/M Disk

SOME COMMON BASIC STATISTICAL PROGRAMS

1. Permutations and combinations
2. Mann-Whitney U-test
3. Mean, variance, and standard deviation
4. Geometric mean deviation
5. Binomial, Poisson, Normal, Chi-square distribution.
6. Chi-square test
7. Student's t-distribution and test
8. F-distribution
9. Linear correlation coefficient
10. Linear regression
11. Multiple linear regression
12. Nth order regression
13. Geometric, exponential regression
14. System reliability

COLLECTION #4

Price: $12.95 Diskette
$15.45 8-inch CP/M Disk

SOME COMMON FINANCIAL PROGRAMS
(and MISCELLANEOUS PROGRAMS)

1. Average growth rate, future projections
2. Tax depreciation
3. Recipe cost
4. Map check
5. Day of the week
6. Days between two dates
7. Anglo to metric
8. Future value of investment, regular deposits
9. Regular deposits, withdrawls
10. Initial investment
11. Nominal, effective interest rate
12. Earned interest
13. Depreciation rate, amount
14. Salvage value
15. Discount commercial paper
16. Principal, regular payment, last payment on loan
17. Remaining balance, term, annual interest on loan
18. Mortgage amortization table
19. Alphabetize

REMEMBER, these are not full commercial-grade programs; they do not contain extensive file manipulation procedures, etc. However, you do get a lot to work with! Also, you must have BASIC (not just CP/M) to run these programs.

PRICE NOTES:

1. The entire collection is available for $39.95 for four diskettes or $49.95 for 4 8-inch CP/M disks.

2. We have priced these collections too low to allow them to be included in quantity discounts. Sorry!

3. The diskette prices above are for single-density. For each double-density diskette, add $3.00.

**DO YOU HAVE ANY SUGGESTIONS**
**on how to make the DYNACOMP catalog better?**
**Please write and tell us.**

## TOOLWORKS™ C/80 3.1
(CP/M only)

TOOLWORKS C/80 compiler is both a professional programming tool and a great way to get started with this popular language. It supports full C structures, pointers and arrays, all storage classes, static data initialization, and in-line assembler. TOOLWORKS compiles all C arithmetic and logical operators, and all control statements, including WHILE, IF-THEN-ELSE, SWITCH-CASE, and GOTO. The only language features not supported are TYPEDEF, arguments to line macros, nested blocks, #LINE, bit fields, and double-data type. Float and long-data types are available with optional MATHPAK.

TOOLWORKS includes a source for sample utility programs, and an expanded C library of over 45 functions providing random sequential and formatted input and output, dynamic storage allocation, UNIX-style I/O redirection and command-line wild card expansion, and selectable program trace or execution time profile by subroutine.

TOOLWORKS C/80 generates 8080 assembler code for the AS absolute assembler (included), or ROMable code for Macro-80 or RMAC. Library is supplied in assembler source and REL formats plus commented C source for system dependent routines. The C/80 version 2.0 was ranked highest in execution speed and efficiency among eight 8080 C compilers in the January, 1983 *Byte* benchmark; C/80 3.1 is even better!

The 48-page manual includes a language summary and bibliography of C references, and complements the language reference manual, Kernighan and Ritchie's *The C Programming Language* (not included). In published reviews (see list below) TOOLWORKS C/80 consistently scores at or near the top in code efficiency, completeness of implementation, and compilation and execution time, even when compared with compilers costing many times as much. Many software products including LISP/80, MYCALC, and C/80 itself, are written in C/80. We feel it is the best value available in a CP/M C compiler, and are proud to make an excellent, afordable C implementation available to both beginners and serious software developers.

Reviewed in: *Byte* (January, 1983, benchmark, and August, 1983), *Micro Cornucopia* (August 1982), *Australian Personal Computer* (April 1983), *Dr. Dobbs' Journal* (May 1983), and *Lifelines* (May 1983).

Requires 56K. Written by Software Toolworks

Price: $49.95 Diskette
$52.45 8-inch CP/M Disk

## UVMAC
(CP/M only)

UVMAC gives the assembly language programmer extra conveniences at an affordable price. Choose the Z80 version and use Zilog mnemonics, or the 8080 version which accepts source files similar to ASM. Each provides macro capabilities, plus source file inclusion so you can build libraries of subroutines, macros, or symbol definitions. You can produce absolute (COM or ABS) files directly with no need for intermediate file or load. UVMAC supports conditional assembly, selectable octal or hex listings, and listing control, and includes non-macro version, AS, more than twice as fast on long assemblies.

Requires 48K. Be sure to tell us whether you want the Z-80 or 8080 version when you order.

Written by Software Toolworks
Price: $29.95 Diskette
$32.45 8-inch CP/M Diskette

## MATHPACK C/80
(CP/M only)

MATHPACK C/80 adds true float and long data types (not subroutines) to the C/80 version 3 compiler. It includes run time library, and a program to modify your compiler for 32-bit data types. MATHPACK C/80 has efficient implementation: floating add and subtract in about 200 μsec. at 4 MHz, floating divide in 2.2 msec., long add in 37 μsec. Includes formatted floating point I/O and C source for transcendental function library.

Requires C/80 3.0 or later.

Written by Software Toolworks
Price: $29.95 Diskette
$32.45 8-inch CP/M Disk

## COMPILER PROGRAMS

Although several compilers have been advertised for the ATARI, we have yet to find one which, for DYNACOMP, is really worth using. Our specifications are simple. We want to write a program in ATARI BASIC using all the features available, and then compile it. We have tried one highly touted compiler which the advertising stated would compile most ATARI programs, save memory and increase speed.

We found that *none* of our programs would compile (partly because all calculations were restricted by the compiler to integers). The resulting program used *more* memory, and it did not run appreciably faster.

If you have found an easy-to-use, not-too-restrictive compiler for ATARI BASIC, let us know so that we can tell the world! Incidentally, for the math-sensitive programs, you should *not* expect an order of magnitude increase in speed in that the compiled version of your program will branch to the same time-consuming functions subroutines as the uncompiled version. Our staff encountered this disappointment once when we converted some BASIC (an interpreter) programs to FORTRAN (a compiler) with the hope of significantly speeding up program execution. It didn't.

## ATARI XL TRANSLATOR
(Atari XL only)

The new Atari XL series of computers has certainly created a good deal of excitement. It has also generated quite a bit of confusion!

Almost all of DYNACOMP's software for the "old" Atari will run on the new XL's. The only ones that have difficulty are just a few of those which use the disk for data storage and retrieval. The typical problem is as follows: after some time the program stops with a 162 error (disk full). However, when you look at the directory, there are 40 to 50 blocks free! Very few people are getting this error.

Atari has acknowledged problems with XL machines and, if you contact their Customer Service department, you can obtain a diskette which will allow you to boot your system so that it can run "standard" Atari software. If you have trouble contacting them or want *fast* service, you may get this TRANSLATOR diskette from DYNACOMP.

Price: $5.00 Diskette
Note: Cannot be used in quantity discounts.

## EBASIC WITH STARBASE 3.2

(CP/M only)

What is EBASIC? EBASIC is a BASIC programming language which has most of the standard features of Microsoft BASIC, as well as some other capabilities which many will find interesting. In fact, EBASIC is *very* similar to CBASIC (available from Software Systems), except EBASIC costs only a fraction of the price. The operational differences are that EBASIC has no PEEK/POKE, PRINT USING or CALL facilities. It *does* have

| | | | | |
|---|---|---|---|---|
| FOR | NEXT | RESTORE | GOTO | LET |
| CLOSE | GOSUB | INPUT | ON | PRINT |
| READ | FILE | RETURN | OUT | END |
| STOP | DATA | DEF | DIM | RANDOMIZE |
| IF | REM | ELSE | THEN | |

| | | | | |
|---|---|---|---|---|
| ABS | ASC | ATN | CHR$ | COS |
| COSH | FRE | INP | INT | LEFT$ |
| LEN | LOG | MID$ | POS | RIGHT$ |
| RND | SGN | SIN | SINH | STR$ |
| SQR | TAB | TAN | VAL | EXP |

The advantages which EBASIC has over Microsoft BASIC are:

1) Line numbers are not necessary except for GOTO/GOSUB transfers.
2) "Procedures" can be included in the program at the "compile" stage (good for structured programming).
3) The precision is automatically 14 digits.
4) The syntax of the *entire* program is checked during the compile step.
5) EBASIC run-time programs tend to be much smaller in memory usage.
6) EBASIC is *much less expensive*.

EBASIC is easy to operate. We sometimes use it at DYNACOMP instead of Microsoft BASIC. A condensed manual is supplied with the diskette/disk. Also, a copy of STARBASE 3.2 (a *very* popular DYNACOMP program) is included on the diskette/disk so that you may examine proper EBASIC syntax. In addition, we recommend you obtain the CBASIC manual published by Osborne/McGraw-Hill (available through your local computer store). Runs on 8080 and Z80 CP/M systems. Requires 24K. A knowledge of the use of CP/M's ED.COM text editor (or some other) is assumed.

Price: $39.95 Diskette
$42.45 Disk

## TOOLWORKS™ LISP/80

(CP/M and IBM only)

Experiment with the artificial intelligence language to which *Byte* magazine devoted its August, 1979, issue. Based on the INTERLISP dialect, TOOLWORKS LISP/80 offers over 75 built-in functions including large machine features like trace, file I/O, and string operations. It comes with a simple editor, file librarian, and formatted expression print routine, all written in LISP, and a 36-page manual. Also included are two artificial intelligence demonstration programs: a guessing game which learns as it plays, and a simple version of the famous ELIZA psychiatrist program.

Reviewed in *Microsystems* (December, 1983).

Requires 48K. Written by Software Toolworks

Price: $39.95 Diskette
$42.45 8-inch CP/M Disk

## TIDY

(8080, 8085, Z80 CPU, and IBM)

TIDY is a program that processes FORTRAN source programs. The FORTRAN source code is copied from one disk file to another while its appearance and readability are improved and certain error conditions are diagnosed. The resulting FORTRAN source program functions exactly as it did before the processing, but it is more easily understood and its maintainability is improved.

Some of the functions TIDY performs are:

- Statement numbers can be reassigned.
- Statements can be indented to indicate do-loop nesting.
- FORMAT statements can be collected to the program end.
- Continuation lines are re-distributed.
- Spaces are removed and/or inserted to improve appearance.
- Program units begin at the top of page.
- Unreferenced statement numbers can be removed.
- Errors are diagnosed.

TIDY is an indispensable tool for everyone involved in FORTRAN program development or maintenance. No other mechanism can so effectively reduce the effort necessary to modify FORTRAN programs.

Requires 64K RAM; 8080, 8085 or Z80 CPU, one disk drive. MBASIC is *not* required.

Price: $39.95 Diskette
$42.45 8" CP/M Disk

## DYNAFORTH

(North Star and CP/M only)

DYNAFORTH is an 8080 assembly language implementation of the figFORTH 8080 Version 1.1 language. The software includes the complete figFORTH vocabulary, the additional DYNAFORTH vocabulary for terminal and disk interfacing, an 8080 assembler that provides the ability to include machine language code in FORTH word definitions, a line editor for program development, and a 50-page user's manual. The user's manual is not in itself a tutorial on the FORTH language, but contains references to recommend tutorial manuals.

The North Star software package includes three versions for execution with DOS Release 5.2 as well as earlier releases. The DYNAFORTH minimum configuration requires at least 12K bytes of RAM in addition to the DOS.

The 8" CP/M software contains the FORTH.COM file and an initial screen file for program development. The CP/M version requires 24K of RAM.

Price: $74.95 Diskette
$76.45 Disk

## SMART KEYBOARD
(Atari only)

This auto-loading machine language program makes your Atari keyboard into a powerful programming tool. You can automatically execute several commands during system startup or program your keyboard to expand a single key-stroke into any set of characters desired. The single-key entry feature allows handicapped individuals to enter any character without having to press two keys simultaneously. A locked cursor feature allows cursor movement up to 50% faster without pressing the CTRL key. SMART KEYBOARD also functions as a file handler allowing your program to store characters destined for the keyboard. This very flexible tool helps intermediate to advanced programmers develop programs much more rapidly. SMART KEYBOARD is fully operable in BASIC, ASSEMBLER, and PILOT cartridge environments. Assembler source is provided for study or modification.

Price: $19.95 Diskette

## NORTH STAR UTILITIES PACKAGE (N★UP)
(North Star only)

N★UP is a set of tools which every person who programs in North Star BASIC should have. It consists of four general functions:

1. Program compression (spaces/REMs removed)
2. Program comparisons
3. Program expansion (to one statement per line)
4. Formatted program displays (e.g., FOR/NEXT indentations)

Actually, N★UP is four separate programs. The compression program is DYNACOMP's original COMPRESS (1981 catalog). The comparison program is COMPARE (1981 catalog). The other two functions are performed by N★XPAND and N★DISPLAY, two new products. Together they form a nice set of utility software!

Price: $29.95 Diskette

## ATARI UTILITIES
(Atari only)

DYNACOMP is offering ATARI UTILITIES both as a goodwill gesture and also to make our own lives simpler. The DYNACOMP diskette contains four programs: A (sorely needed) RENUMBER program, a disk RPM test program, and two programs which draw portraits of the Atari 400 and Atari 800 (cute, but really not very useful). The line renumbering routine is for those who program and have been frustrated by the absence of this common function in Atari BASIC. The RPM test program allows you to check (and adjust) your disk speed to meet the original specifications. We have ulterior motives here: If your drive speed is accurate, then your DYNACOMP software will load more reliably and you will not be calling DYNACOMP and telling us about a 138 or 144 error. Our price simply covers our costs:

Price: $5.00 Diskette

(Does not qualify in or for quantity discounts)

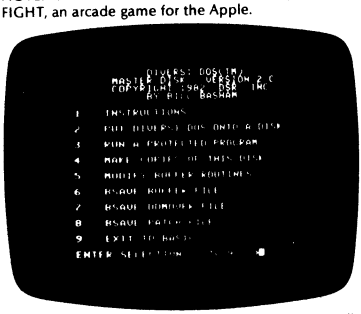
## DIVERSI-DOS
(Apple only)

Here is a disk operating system (DOS) for your Apple which has tremendous advantages over that supplied by the original manufacturer. First, DIVERSI-DOS speeds up your disk input/output by a factor of 3 or more, which is very noticeable for mail list, financial, engineering, etc. programs. Second, DIVERSI-DOS includes a keyboard buffer; you can type ahead as fast as you want. Third, with a 16K RAM card (which incidentally, DYNACOMP sells at a *low* price), you can buffer your printer output ("spool"). Fourth, DIVERSI-DOS can move itself to a RAM card to increase space for BASIC. And more!

Now for the surprising part. DYNACOMP's price is *$5.00* for the diskette plus $3.00 for the documentation. When the diskette is delivered "it is then the responsibility of the customer to send a $25 license fee" to the original publisher. Since DYNACOMP's sales are confidential, it is up to you and your conscience to send in the license fee. We think this is a very noble experiment and we will be comparing our net sales figures with the publisher's license returns (*please* mention that you got DIVERSI-DOS from DYNACOMP). Requires 48K, one disk drive.

Price: $5.00 for the diskette plus
$3.00 for the documentation

NOTE: DIVERSI-DOS now contains the game DOG-FIGHT, an arcade game for the Apple.




Note: DIVERSI-DOS cannot be included in volume discounts.

## SCREEN MASTER
(Atari only)

SCREEN MASTER is a program that writes programs for you. It allows you to move a cursor about the screen to create displays or "panels", such as menus for programs or any other kind of text display. You can create panels in ATARI text graphics modes 0, 1, or 2. Simple commands allow easy repositioning of text on the screen. When the panel is done, SCREEN MASTER actually writes the BASIC statements that will reproduce the panel you have designed and stores them on disk. Later you can insert these program lines into another program you might be writing, or recall them from the disk for further editing. All the functions performed by SCREEN MASTER are selected from a menu. SCREEN MASTER makes it very easy to create visually pleasing and effective text displays.

Requires 32K.

Price: $19.95 Diskette

## INTELINK
(Atari diskette only)

INTELINK is a menu-driven collection of programs which are designed to facilitate two-way telephone communication between your Atari and other computers, such as information networks and time-share systems. These programs have very special features which dramatically reduce the time required to transfer information to or from your Atari. Since the phone company and most networks charge according to connect time, INTELINK can easily pay for itself through reduced service charges.

INTELINK works as follows. Suppose you wish to read a large information file which is available from THE SOURCE (a popular service). Without INTELINK you might use Atari's Telelink program to list the information one screen frame at a time, frequently pausing in order to read the data (e.g., stock quotations). Alternatively, the data could be directly sent to your printer for later study. Both methods are effective, though they are slow and, therefore, costly. INTELINK provides both of those modes of operation, plus the additional option of quickly storing the complete exchange on diskette. In this way, the data is permanently stored on the diskette and may be conveniently recalled later.

INTELINK has several other important features, including one designed for use with time-share systems. Consider the situation in which you wish to write a program for a time-share computer. Ordinarily, the program would be built and edited at length while connected to the other computer. With INTELINK you can turn the Atari into a very intelligent terminal at which you may create the program (in BASIC, FORTRAN, PASCAL, etc.) off-line using the Text Editor program which is part of INTELINK. The Atari may then be connected to the time-share computer and the program quickly loaded, again saving connect time. Further, when you run the program, all the results (and responses) may be saved on diskette.

INTELINK requires the following equipment:

- An Atari 400 or 800 computer with at least 24K or RAM (Random Access Memory).
- An Atari 850 interface module.
- A 300 baud modem (e.g., an Atari 830).
- An Atari disk drive.
- Optionally, an Atari 825 (or equivalent) printer.

Operationally, it is required that the other computer communicate in the full duplex mode at 300 baud.

INTELINK comes with a 13 page manual which fully describes all functions.

Price: $59.95 Diskette

## ULTRA TERMINAL-64
(Commodore C-64 Cartridge)

ULTRA TERMINAL-64 is a dual-purpose cartridge which can turn your C-64 into a very smart terminal. It can be used for RS232C communications (in conjunction with the VIC 1011A RS232C interface) or over the phone (with the inexpensive VIC modem).

The features include:

- *Easy* installation. Just plug it in.
- Download to disk (if you have one).
- Dump to printer (if you have one).
- Elapsed time clock.
- Selectable baud, parity, stop bits, word length, half/full duplex, etc.
- All functions menu-selected.

With ULTRA TERMINAL-64 you can communicate with *The Source, Compuserve,* other C-64's, etc.

Price: $69.95 Cartridge

## UTIL
(Apple only)

This APPLESOFT program runs on a 48K APPLE II with access to APPLESOFT. UTIL will operate under DOS 3.2 and 3.3. UTIL will start by asking you to insert the diskette you wish to process. It will pause for you to insert the diskette you want to examine into the disk drive. UTIL will then read the diskette to determine the initial parameters it is to use (such as 3.2 vs. 3.3). The MENU page is then displayed.

The MENU shows the list of options available in UTIL, along with the currently selected slot/drive and track/sector numbers. As is the rule in UTIL, these numbers are displayed in hexadecimal. The following options are available:

| | |
|---|---|
| SEARCH MODE | DELETE DOS |
| CHANGE MODE | PRINT SECTOR |
| CATALOG FUNCTIONS | CHANGE DISK ID |
| FREE SPACE | NEW TRACK, SECTOR |
| FREE SECTORS | NEW SLOT, DRIVE |
| DIRECTORY SECTOR | INSTRUCTIONS/NEW DISK |
| VTOC SECTOR | |
| EDIT VTOC | DISK CLEAN-UP |

As you can see, UTIL contains a complete set of functions for disk manipulation.

Requires 32K.

Price: $19.95 Diskette

## PAB-COM COMMUNICATIONS PROGRAM
(IBM only)

PAB-COM is a menu-driven communications program for exchanges between IBM-PC and other computers including the *Dow Jones Service, The Source,* another IBM-PC, etc. Features included are:

- Manual or automatic dialing with or without automatic redial and delayed dialing.
- Various modes: conversation, transmit files, receive files, and save-to-disk modes.

Provisions for automatic delayed dialing are included for a time delay up to 4 days. A telephone directory can be formed and numbers automatically dialed by name reference.

Flexibility includes user-defined baud rate, parity, bits/character, number of stop bits, and full/half duplex. Designed for a Hayes 300, 300/1200 Smart Modem, or a CAT modem.

PAB-COM is ideal for uploading/downloading data files and programs to/from mainframes and other microcomputers. One common use of PAB-COM is to load data files from a mainframe and process them on the IBM PC, either at work or at home.

Requires IBM PC with 1 or more single-sided or double-sided floppy disks.

Price: $39.95 Diskette

## NEW FORMATS SUPPORTED BY DYNACOMP

DYNACOMP has *added* the following 5¼" diskette formats to its CP/M line of software:

EPSON QX-10
XEROX 820
CROMEMCO

## TURNKEY AND MENU
(Atari only)

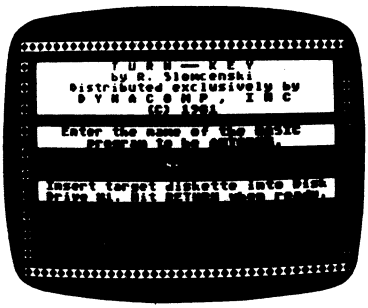
TURNKEY is a diskette-based utility program which allows you to select any BASIC program to be automatically RUN at system power-up. TURNKEY creates an AUTORUN.SYS file on your diskette. This file auto-executes the BASIC program of your choice when the console is first turned on.

MENU is a BASIC program included on the TURNKEY diskette at no extra cost. MENU lists the contents of the diskette alphabetically and allows you to RUN any BASIC program on the diskette by typing a single key. Use TURNKEY to auto-execute MENU and you have the ability to RUN any program on your diskette from the instant you turn on the Atari — a truly professional "turnkey" system!

Requires 32K Atari disk system.

Price: $19.95 Diskette

Sample display:




## MEDIA MASTER
(Osborne Double Density only)

This is one of the most useful programs that you can get for your double-density Osborne! We use it every day!

The problem today's Osborne owner faces is lack of available software. Only a few companies, like DYNACOMP, continue to support the Osborne. Now, with MEDIA MASTER, you can work with diskettes written on the following machines:

A. OSBORNE DD
B. OSBORNE SD
C. DEC VT 180
D. IBM PC CP/M
E. IBM PC DOS 1.0
F. IBM PC DOS 2.0
G. TI PROFESSIONAL CP/M
H. TRS-80 I W/OMIKRON CP/M
I. TRS-80 III W/MEMTECH CP/M
J. TRS-80 IV CP/M+
K. LNW-80
L. XEROX 820 I (SD)
M. XEROX 820 II (DD)
N. NEC PC8001A CP/M
O. ACTRIX
P. CROMEMCO W/Int'l Term.
Q. CROMEMCO CDOS (SD)
R. CROMEMCO CDOS (DD)
S. LOBO MAX-80
T. MORROW MD1, MD2
U. KAYPRO II
V. ZENITH Z90
W. HEATH Z-100 CP/M
X. HEATH W/Magnolia
Y. SYSTEL II CP/M

MEDIA MASTER is simple and very easy to use. In essence you can set *each* of your two drives to a *different* format. For example, you can set drive A to KAYPRO II format and Drive B to IBM MSDOS. Then you can move files between those drives at will. Here is the menu of operations you can perform:

Copy files
Print directory
Display directory
Set drive to specified format
Erase files
Format

MEDIA MASTER can be the key to keeping your Osborne from becoming obsolete and is a *must* for every Osborne owner.

Price: $29.95 Double-density Diskette

## ALPHACAT
(Apple only)

ALPHACAT has only one goal in life — to organize the directories on your diskette. ALPHACAT will sort and organize them alphabetically by name or type (Applesoft, integer, binary, text, etc.) or arrange according to file size. The disk directory is rewritten with the organization you've chosen. ALPHACAT does its job quickly and efficiently, and is *very* easy to use. Requires one drive and 48K of RAM.

Price: $14.95 Diskette

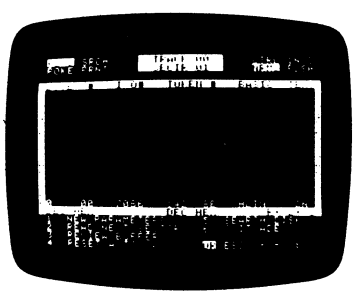
## ADVANCED DISK EDITOR (ADE)
(Apple only)

ADE provides complete flexibility in the manipulation of disk data on a byte-by-byte level. It can be used as a learning tool, programming utility, or a general purpose repair kit for crashed disks.

All of the editing is done from a menu-screen (see below). Appearing on that screen are the location in the sector, memory location, token form, BASIC equivalent (if applicable), ASCII value, and so on. You may step through the disk byte-by-byte, forward or backward, search, replace, block move, clear a sector, enter data, mask data, toggle printer (if you have one), etc.

Recommended for the more advanced programmer. Requires 48K, one disk drive. Printer optional.

Price: $39.95 Diskette



## DFILE

(North Star, Osborne, and Atari diskettes only)

The disk user soon learns that the rapidly accumulating stack of diskettes represents an organization problem. Shuffling through this stack to find a particular program or file is often frustrating.

The DFILE user, however, is able to quickly locate any desired file or program. Each diskette is assigned a four character ID and the list of its files is maintained on a special data base system diskette. The simple menu selections in DFILE allow complete maintenance of this data base. DFILE may be used on single/double density and single/double-sided drives (North Star), and can be customized to use either one or two drives.

The North Star version is also provided in two programs for execution at 2AOOH or 2DOOH. A list of available menu selections is shown below.

1 - LIST DISK DIRECTORY
2 - ADD COMMENTS TO DFIL ENTRY
3 - DELETE FILE ENTRY IN DFIL
4 - LIST DFIL
5 - LIST ALL ENTRIES FOR FILE NAME X
6 - LIST ALL ENTRIES FOR DISK ID X
7 - ADD DISK DIRECTORY TO DFIL
8 - INITIALIZE DFIL

Menu selection 7 copies entries from the user disk directory into the data base file.

Menu selection 5 quickly lists all diskette locations of a particular file or program.

Menu selection 6 lists all files which are on a particular diskette.

The other menu selections allow the user to maintain current information in the data base.

DFILE is a must for any North Star or Atari user having an extensive diskette library.

Runs in 8K of program memory.

Price: $19.95 Diskette

## TIMER

(Osborne only)

TIMER is a simple utility disk for checking the performance of the A and B disk drives. You may measure the speed of each drive to determine whether your system is correctly set up (the most common problem in single/double density compatibility is drive speed differences). You may also make the drive automatically alternate between two given tracks, home, or seek a given track.

If you are having trouble reading disks from other machines, check your drive speed!

Price: $5.00 Diskette

(Cannot be applied toward quantity discounts.)

## CP/M DATA FILE TRANSLATOR

(CP/M and IBM only)

CP/M DATA FILE TRANSLATOR was designed to address a need which we have at DYNACOMP and which has been described by many who have called or written to DYNACOMP. There are many software packages in existence today (e.g., statistics, engineering, spread sheet, personal finance, etc.) which create random and/or sequential access data files. In most cases the files generated by one package are not directly compatible with those created by others. This has caused a great deal of inconvenience for those who want to use the same data base with different software packages. To compound things, the file structure employed by these programs is generally not described in the associated manuals since the user has no need to know the details (when using just that one package). Therefore, what do you do when you want to use MULTI-LINEAR REGRESSION with your VISICALC data files?

To deal with this situation, DYNACOMP has written a software utility which permits you to unravel your data files and convert them to other formats. With CP/M DATA FILE TRANSLATOR you may read multi-variable sequential files, edit those files, and write selected variables to random access files having the structure you define. You can also read from random access files, edit, and create sequential files. Sequential files may be changed in format, variables extracted from parts of sequential files, edited, and written to other sequential or random files, and so on. In other words, you have complete flexibility in manipulating data files and splitting data out from random or sequential files.

In addition, if you do not know the file type or structure, CP/M DATA FILE TRANSLATOR allows you to easily and conveniently probe the file to find out what type it is (random or sequential) and what its structure is.

All of the TRANSLATOR's functions are menu driven. Further, once you have determined the correct translation procedure, no matter how complex or arduous, you may save the procedure on disk so that, in the future, the manipulation can be done automatically!

Another feature which has been included to help you identify data sets is a facility for plotting. All plots are done using alphanumerics, and may be sent to your printer.

Also, in our testing of the TRANSLATOR we found that people who had no prior experience in dealing with file structures quickly learned about random and sequential files and their formats; learning by experiment.

Quite frankly, we do not know why this type of utility has not been commercially available until now. The need is clear and pressing. Why didn't we write it a few years ago?

Requires 48K and one disk drive. A printer is supported but not necessary. Requires MBASIC.

Price: $39.95 Diskette
$42.45 8-inch CP/M Disk

## SCREEN PRINTER

(TRS-80 only)

The SCREEN PRINTER is a utility for the TRS-80 Model I (the Model III has this function built in) which sends the contents of the screen to the printer. If the screen contains non-graphic characters (characters with ASCII codes less than 128), SCREEN PRINTER produces an exact reproduction of the screen. If the screen contains graphic characters (characters with codes from 128 to 191), the utility will replace each of these characters with an asterisk in the printout. To create an accurate reproduction of the screen, this utility requires a printer with at least 64 characters to the line.

Price: $9.95 Cassette
$13.95 Diskette

## GRAFIX ARTIST™
(Commodore 64 only)

For this one we refer you to the review section which appears later (see the index) in this catalog for a more detailed description. In short, GRAFIX ARTIST™ is a great educational graphics program utility that embodies three concepts:

1. The Turtle-graphics language
2. Joystick graphics (joystick required)
3. Utilities to convert Turtle graphics to joystick graphics pictures for use in BASIC or machine language programs.

GRAFIX ARTIST requires no previous programming experience and is very easy to use. In the Program Mode you may create pictures using a LOGO-like language. In the Joystick Mode you can paint. Either way you can make, change, save, and recall high-resolution pictures.

Price: $39.95 Diskette

See the review section for more information.

## HAVE YOU ORDERED RECENTLY?

IF NOT, check the address label on the back cover of this catalog. If there is an asterisk (*) in front of your name, then this may be your last *free* catalog from DYNACOMP. To update your free subscription, please fill out the simple form on the inside of the back cover and mail it promptly to DYNACOMP.

## GRAPHICS CREATOR
(Commodore 64 only)

GRAPHICS CREATOR allows you (even if you know very little about programming) to create graphics displays very quickly and easily. The advanced programmer will also like this package since it allows saving screens for use in programs. GRAPHICS CREATOR generates complete programs which can be saved on disk, as well as sequential files for future editing. GRAPHICS CREATOR includes a sprite editor which allows you to generate sprite data. The sprite data can be stored on disk and later edited. Sprite data can be sent to the printer or to the monitor screen.

The GRAPHICS CREATOR menu alows you nine options:

1. Edit a new screen
2. Edit a screen from disk
3. Edit a sprite
4. Edit a sprite (multicolor)
5. Edit a sprite from disk
6. Save screen
7. Save sprite data
8. See sprite data
9. Generate a BASIC program

Requires a joystick. Printer is optional.

Price: $29.95 Diskette

## PLAYER MISSILE GRAPHICS TOOL KIT
(Atari only)

DYNACOMP now offers three Atari graphics development packages PLAYER-MISSILE GRAPHICS TABLET (P.M.G.T.; page 25 of the Winter 1982 - 1983 catalog), PLAYER-MISSILE PLAYER EDITOR (P.M.P.E. page 26) and PLAYER-MISSILE TOOL KIT (described below). The first package helps you create complicated backgrounds for your program. The second provides an easy-to-use editor for creating players and missiles, but presupposes that you already have some knowledge of how to use these players.

The third offering, PLAYER-MISSILE TOOL KIT is an expanded version of P.M.P.E. which **teaches** you the basics of player missile graphics and also provides very professional and easy-to-use tools for graphics development. The documentation (21 pages) is clearly and concisely written (it is excellent!). It carefully explains what player-missile graphics are, and the elements of their use.

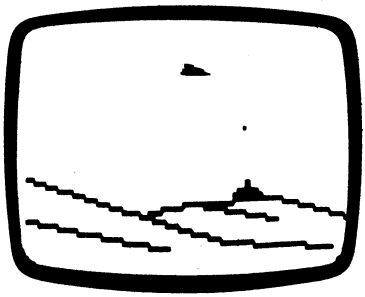
The package also includes three programs:

1. PMINIT – a program to be included in your own code which facilitates the operation of PM graphics. This program pokes into memory machine language software which greatly speeds up player movement.
2. PMBUILD – A P.M.P.E. which helps you quickly construct players and missiles for inclusion in your program.
3. PMDEMO – A classy demonstration program, complete with a program listing and comments, which clearly shows the use of PMINIT and how simple it is to create graphics.

To really test this package, it was given to a DYNACOMP employee who had never used player-missile graphics, and who hates games. He came back very pleased and excited about writing an animation (as he called it). He was so enthusiastic that DYNACOMP had him write this description! Requires 24K.

Price: $25.95 Cassette
$29.95 Diskette

Sample display:



## THE SHAPE MAGICIAN
(Apple II, 48K Diskette)

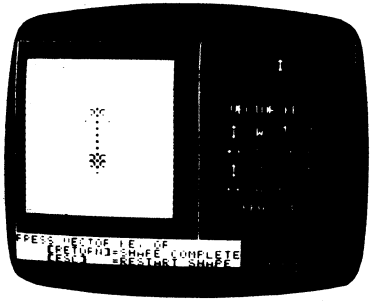
The Apple II has several very powerful graphics features which include the ability to define shapes in a "shape table". The shapes may then be drawn, rotated and scaled on the high resolution graphics screen. This ability is useful for applications which require the repetitive drawing of similar shapes at different locations or angular orientations. Unfortunately, designing and entering shapes by hand is a tedious and error prone process, and changes are very difficult to accomplish once the table has been entered.

THE SHAPE MAGICIAN was designed to make the application of shape tables easy for even novice programmers. A 25 x 25 point grid is drawn on the screen and a graphics cursor moved on the grid to define a shape. The actual shape being defined is simultaneously displayed as it will finally look on the high resolution graphics screen. After a shape has been created, it may be stored on a diskette for later recall by an application program. Shapes may be edited and changed at any time.

THE SHAPE MAGICIAN includes complete documentation describing how to use shape tables in your own high resolution graphics applications. If you ever have wanted to write programs using graphics, but found the programming required too tedious, then THE SHAPE MAGICIAN is the answer to your needs.

Price: $29.95 Diskette

Sample display:



## FLIPSKETCH
(Atari Only)

FLIPSKETCH combines a powerful drawing program with exciting and impressive animation features. FLIPSKETCH uses low resolution graphics to allow you to create as many screens as possible. A 16K system lets you produce 8 screens, 24K allows 24 screens, 32K allows 40 screens, and 40K allows 56 screens. The screens include one background frame. Up to 24 different colors may be selected for each screen. You use a joystick to design each frame. Then you may animate (slow to rapid) your work in one of two ways: sequential animation, where each screen is displayed in the order in which it was created, or programmed animation, where you may display screens in any order you desire. With programmed animation, you can display up to 300 frames. Your work can be saved on cassette or diskette for later retrieval. (Diskette version includes a sample animation sequence.)

Screen creation is made simple by use of the joystick and many convenient commands (line drawing; area "fill"; image moving, inversion, reflection, fading; background merging; image "subtracting", superposition; and so on).

Requires 16K minimum (cassette), 24K minimum (diskette) and one joystick.

Price: $19.95 Cassette
$23.95 Diskette

See the review section for more information.

## COMMODORE 64 GRAPHIC GRID
(C-64 only)

This is *not* a program. GRAPHIC GRID is a pad of work sheets which are *tremendously* useful for designing memory-mapped color screens using the C-64 graphics character set. The grid portion permits you to draw in your graphics by hand. The adjacent code table shows the normal/inverse character values to be poked into memory. By drawing with colored pencils you may read the grid and quickly encode your design into DATA statements to be read and poked. Great for introductory screens, illustrations, or backgrounds for animation.

Each sheet is 8½" × 11". Each pad contains 27 sheets.

Price: $5.95 per pad

## OSBOARD
(Osborne only)

NOTE: OSBOARD was originally distributed through Osborne Computer Corporation. It is now distributed through DYNACOMP.

OSBOARD is to graphics what a word processor is to text. OSBOARD allows you to easily create graphic screens using every possible graphic (or alphanumeric) character and video attribute built into your machine. Here are some of the review comments:

"greatly enhances the versatility and usefulness of the machine. Any Osborne user interested in exploring the computer's graphic potential should seriously consider this fine program."
George Taylor/Portable Companion

"This is the most comprehensive assembly-language graphics package evaluated by *ON*. (The manuals) are excellent and user readable."
Earl Holland/ ON-the Osborne Newsletter

In addition to screen graphics, you may *print* your creations (see the OSGRAPH description for compatible printers). OSBOARD files may be converted (using CONVERT programs supplied) into formats which make it easy to add graphics to BASIC, CBASIC or assembly language programs. A number of sample graphics files are provided to demonstrate the powerul capabilities of this package.

Available in two versions (state which you want):

OSBORNE 1: Allows you to create graphics screens with widths of 52, 80 or 104 columns, even on a 52-column machine.

EXECUTIVE: Uses the Executive built-in "windowing" capabilities to provide block move, block fill, block delete, etc.

Price: $29.95 Diskette
(State version you want)

## OSBRIEF
(Osborne only)

NOTE: OSBRIEF was originally distributed by the Osborne Computer Corporation. It is now distributed by DYNACOMP.

Now you can create eye-popping graphic displays with ABSOLUTELY NO PROGRAMMING! That's right — NO PROGRAMMING! While most graphics editors (including our own OSBOARD) allow you to easily display files using BASIC programs, OSBRIEF allows you to sequence and display any number of graphic screens by just listing the file names in the order you wish to have them displayed — OSBRIEF does the rest! OSBRIEF is designed for use with graphic data files created with OSBOARD or with charts and graphs created with OSGRAPH.

OSBRIEF is the ideal tool for creating automated briefings, electronic slide shows, self-running demonstrations, sales aids, or for just about any use that requires attended or unattended presentation of graphic data.

A typical OSBRIEF presentation is controlled by a master file which you create with Wordstar. The master file contains the names of the graphics files to be displayed, the order in which they will be displayed, the "special effect" to be used to write each file to the screen, and the amount of time that each file will remain on-screen. Eleven spectacular special effects are available including four "wipes" (left-to-right, right-to-left, top-to-bottom, and bottom-to-top), fade-in and fade-out, curtains open and close, push up and push down, spiral, and more!

An OSBRIEF presentation must be seen to be appreciated. Each screen may be displayed from 1 to 99 seconds or it may be frozen on-screen until any key is pressed. The master file may also contain special commands to paint the screen white, black or gray as well as a command which causes the demonstration to repeat until halted.

The OSBRIEF package includes a bonus utility program called CHANGE. CHANGE converts ordinary text files (from Wordstar, SuperCalc, etc.) into a format compatible with OSBRIEF, making it easy to interweave text and graphics in your presentations.

The Osborne 1 version of OSBRIEF automatically handles files of all standard widths (i.e. 52, 80, and 104 columns). The Executive version is "upward compatible" with the Osborne 1 version; that is, it will read and display all files—even those created on an Osborne 1.

OSBRIEF is very "user friendly" and its clear and easy-to-understand manual and helpful error messages will help you to get your presentations "on the air" in a minimum of time.

Price: $24.95 Diskette
(Specify which model Osborne)

## COLLECTIONS

OSBOARD, OSGRAPH and OSBRIEF may be purchased as a *collection* for $69.95. Please state whether you want the single-density or double-density version. Note that collections cannot be further discounted or applied towards quantity discounts.

## OSGRAPH
(Osborne only)

NOTE: OSGRAPH was originally distributed through the Osborne Computer Corporation. It is now distributed through DYNACOMP.

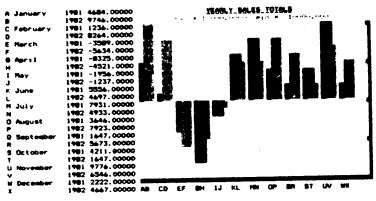
OSGRAPH is a business graphics package which can process just about any data source (hand-entered data, SuperCalc, dBase II files, MBASIC program output, and more) into high quality horizontal or vertical bar charts, pie charts, or XY plots.

OSGRAPH is menu-driven, with chart parameters which can be changed at any time and their results displayed on the screen. Charts may be saved on disk and recalled for editing or printing. Charts are automatically labelled or custom labels may be used. Output print width is 80 columns. Works with the following printers: Epson (with Graftrax), IDS Prism 80/132 (with Dot-Plot), Microprism, C. Itoh Starwriter and Pro-writer, Okidata 82/83 (with Oki-Graph) and 92/93, NEC 8023AC, Transtar 130, Silver Reed 550, Qume Sprint 5, all Diablo 630 compatible daisy wheel printers.

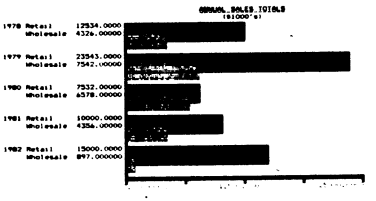
Available for all Osborne models (state which). Compatiblle with the OSBOARD and OSBRIEF packages. Includes a 76-page step-by-step manual.

Price: $34.95 Single-density version (3 diskettes)
$34.95 Double-density version (2 diskettes)

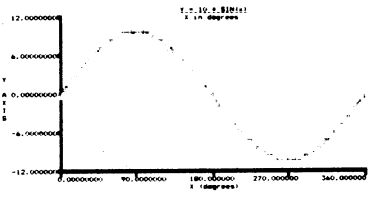
Sample print out:



Vertical Bar Chart



Horisontal Bar Chart



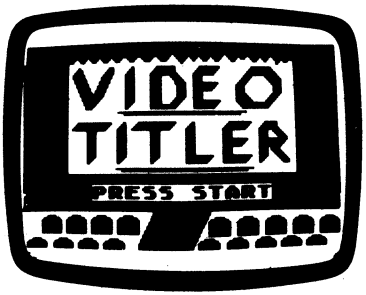
XY Plot (Scatter Graph)

## VIDEO TITLER
(Atari only)

The VIDEO TITLER may be used to create a wide variety of screen displays and sounds. These displays can incorporate various sized text and multicolored high resolution graphics screens. The display sequences can be used as a title generator for home video movies or as a message display board to sell or demonstrate a product. Individual displays can be photographed for use in slide presentations. The display sequences can be made to repeat making them useful for teaching or entertaining young children.

Commands are provided to make it easy and fun to paint your own high resolution graphics screens. These screens can be saved, changed and incorporated into display sequences. Detailed step by step instructions and many ready to run examples included on the program diskette make VIDEO TITLER easy to use.

Price: $29.95 Diskette




## CREATOR AND CREATOR II
(Osborne only)

CREATOR and CREATOR II both allow the creation of Osborne graphic displays – the display being the visible 52 X 24-character screen of the Osborne. With these programs you can draw graphic characters, pictures, and diagrams on the screen and then save the graphic displays to disk. Once saved, they can be recalled from disk and, if you have an Epson MX80 printer (expanded with the Graf-Trax option), they can even be printed.

Drawing on the screen with CREATOR and CREATOR II is much like editing a screen-sized document with WordStar.

CREATOR is the predecessor of CREATOR II, and is less powerful than the latter. However, DYNACOMP includes it in this package so you can get some idea of how these programs work and so you may gain an understanding of some aspects of the Osborne graphic character set. CREATOR is written in MBASIC and you can examine the listing if you like. If you know how to program in BASIC you may even modify parts of the program. CREATOR II is in machine language, which allows it to run much faster than CREATOR.

CREATOR and CREATOR II can be used for diagrams, pictures, floor plans, artistic creations and the like. They are simple enough to be used by children. CREATOR is especially good in this regard.

Price: $19.95 Diskette

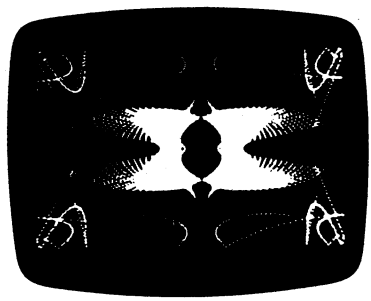
## CRYSTALS
(Atari only)

CRYSTALS is a unique program. It is not a game or simulation, business, or technical program. It simply generates very beautiful color patterns on your screen. These fascinating graphics displays are always different and the effect is mesmerizing, much like sitting in front of an electronic fireplace! CRYSTALS has been used in retail stores to demonstrate the graphics, sound, and color capabilities of the Atari.

Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



## CAT-GRAPHIX
(Apple only)

DYNACOMP is always on the lookout for high quality software produced by outside authors. Usually we avoid considering public-domain software because, quite frankly, it is either poorly written, trivial, or *very* specific to *one* person's needs. However, we occasionally encounter a piece of public-domain software which we think is good and should be more readily available to the public. What do we get from distributing this material? Certainly not much in profit (we only cover costs). However, maybe you will keep us in mind when thinking about buying quality software at good prices.

CAT-GRAPHIX is a collection of programs and subroutines for generating low- and high-resolution graphics on the Apple. The subroutines are fast since they are written in machine language. The support programs for generating the tables and images are in Applesoft, with calls to the machine-language programs. Included are routines for rotating and scaling images, as well as for scrolling.

This is an experimenter's and programmer's package. Although there is accompanying documentation, you really have to look at how things are done by examining the demonstration programs (there are 20 of them!)

To make it easier for you to use this package, DYNACOMP provides 35 pages of instructions and programs. However, be forewarned that you will have to *read, experiment,* and *think!*

Price: $12.95 Diskette
(Note: Can not be used towards quantity discounts.)

## APPLE PUBLIC DOMAIN SOFTWARE

(Apple only)

The DYNACOMP quest for public domain software continues! This time we've uncovered a library of 121 diskettes. From these we selected 50 for inclusion in the DYNACOMP catalog. These diskettes are super bargains for the price. A word of caution, however: these programs are *not* supported, and are not necessarily of commercial quality. If a diskette has a read error, we will replace it free of charge. Otherwise, no returns. We simply can't afford to support this software at the price we charge (basically a small copying fee plus the cost of the diskette). Also, no other discounts apply other than those given below. All diskettes are copied on one side only, but there is a lot on that side!

Price: $3.95 each (1-4 diskettes)
$3.45 each (5-10 diskettes)
$2.95 each (10-50 diskettes)

When ordering, please CLEARLY state the DYNACOMP volume number (e.g., APD #3).

APD # 1 Graphics demos
APD # 2 3-D graphics demos
APD # 3 Character table generator, tables
APD # 4 Contour graphics demos
APD # 5 Shape editor, graphics
APD # 6 Graphics demos
APD # 7 Table maker, graphics
APD # 8 Graphics generator
APD # 9 More graphics demos!
APD #10 Astronomy; OSCAR/planet locator
APD #11 Satelite tracking
APD #12 Aircraft database
APD #13 More aircraft data
APD #14 Stock monitor, VISICALC formulas
APD #15 Inventory, depreciation, financial
APD #16 Amortization, NPV, filing
APD #17 Checkbook, budget
APD #18 Database management
APD #19 Beagle Bros. demo
APD #20 School grading programs
APD #21 Chemistry grader
APD #22 Modem programs
APD #23 Ham log
APD #24 Antenna height, plot, filters
APD #25 Calorie counting, recipes
APD #26 Games
APD #27 Games
APD #28 Games
APD #29 Games
APD #30 Games
APD #31 Games
APD #32 Games
APD #33 Games
APD #34 Adventure
APD #35 Hello/menu programs
APD #36 Math and statistics
APD #37 Statistics, calculus
APD #38 Functions, plotting
APD #39 Miscellaneous
APD #40 Miscellaneous
APD #41 DOS/BASIC utilities
APD #42 Renumber, sort, utilities
APD #43 Sorting
APD #44 Utilities
APD #45 Utilities
APD #46 Epson utilities
APD #47 Epson utilities, games
APD #48 Slide show
APD #49 Disk catalog
APD #50 Micro Lisp, airfoil designer

## PC-BLUE PUBLIC DOMAIN SOFTWARE FOR THE IBM PC

(IBM only)

As with the PC-SIG library (described elsewhere), DYNACOMP is making available some very nice public-domain software at a price which basically just covers our costs.

You may either rent the entire 32-diskette collection for 10 days ($39.95), purchase it ($119.95), or purchase selected diskettes ($5.95 each). The format used is single-sided PC DOS 1.0/2.0 and MS DOS compatible. We have not included the entire collection because of overlaps with the PC-SIG library, and because some of the diskettes require an 8-bit 8080 microprocessor (it is not clear why they are in the library at all!).

If you choose to rent the library, the same restrictions apply as for renting the PC-SIG library, except that the late charge is $5.00 per day. Individual diskettes cannot be rented, and these diskettes do not count toward volume discounts.

Price: $119.95 – Purchase of 32-diskette collection
$ 39.95 – 10-day rental (plus $5/day late charge)
$ 5.95 – per individual diskette

You will find these prices to be lower than those available elsewhere, and our speed of delivery is impressive.

**Mini-Menu** (Use the DYNACOMP diskette number, shown at the left of each title, when ordering)

1. Miscellaneous utilities: Super DIR, Asynchronous Communications, Display Utility.
2. – 17. Not available. Require an 8080 or are duplicates of items in the PC-SIG library.
18. PC-TALK (Communications Package), PACMAN2, PC Notes
19. PC-FILE (Database Package)
20. Remote Bulletin Board System, Miscellaneous
21. Cross-reference Utility, Front-end Interface Utility (Monitor)
22. Expanding the Lister Utility for BASIC programs.
23. RATBAS, Warm System Restarts, Strip-Off WordStar High Bits, Graphtrax Utility.
24. BASIC Games.
25. BASIC Games.
26. 8087 Sampler Programs.
27. Kermit – PC/Mainframe Host Communications by Columbia University (1 of 2).
28. Kermit – PC/Mainframe Host Communications by Columbia University (2 of 2).
29. Miscellaneous BASIC programs.
30. Misc. Applications Systems: Cryptography, Filing, Inventory, Mail List, Regression.
31. PC-TALK III (Supercedes PC-TALK in Volume 18)
32. PC-TALK III Documentation, Miscellaneous Communications Systems.
33. Misc. Applications: Compression, Music, Dates, Sunrise, Plotting, etc.
34. dBASE & SuperCalc™ templates.
35. Miscellaneous BASIC utilities.
36. IBM Keyboard Drill System.
37. MODEM7 for IBM PC, Program Control System WordStar Mods., Misc. Utilities.
38. Disk Directory Utility, Squish REMarks, Lotus 1-2-3 Modifications.
39. Screen Editor, Word Processing, Memo Minder, History & Multiplication Drills.
40. EPISTAT statistical package, IBM modem programs.
41. Galaxy Trek with graphics (also works with monochrome monitor).
42. A cheap Assembler, Electronic RAM Disk, Misc. Utilities.

NOTE: Programs No. 43, 44, and 45 come as two-diskette sets and are priced as two diskettes.

43. Inventory Order Control System in dBASE II.
44. PC Graphics, by Eugene Ying.
45. Bulletin Board System.

## PC-SIG
## PUBLIC DOMAIN SOFTWARE
## FOR THE IBM PC
(IBM only)

Here is a large collection of public domain diskettes for the IBM PC which you may either purchase or rent from DYNACOMP. Some of the diskettes are in the "freeware" category; the author encourages you to make a donation to him or her if you like the program. In any case, these diskettes contain a great deal of software which you may be able to use directly or can modify to suit your needs. These are user-donated programs and are not necessarily as nicely done as the corresponding commercial programs (i.e., no guarantees!).

The format used is single-sided, PC DOS 1.0/2.0 and MS DOS (8 and 9 sectors) compatible.

You may purchase the entire 99-diskette collection for $399.95 (Master Card, Visa, money order, or certified checks only!). Alternatively, you may rent the collection for ten days for $99.95. However, there are some restrictions if you choose the renting route:

1. Only Master Card and Visa are accepted.
2. There is a $10-per-day late charge if the library is not returned on time. Your charge account will be billed for each day the library is overdue, up to the purchase price of the library. You can appreciate the need to have the library returned on time (so that it can be sent promptly to the next renter).

Individual selections from the library may be purchased (not rented) for $5.95 each (sorry, these diskettes cannot be included in the 10% / 20% quantity discounts). Be sure to give the diskette volume number(s) when ordering.

Price: $399.95 – Purchase of 99-diskette collection.
99.95 – 10-day rental (plus $10/day late charge)
5.95 – per individual diskette

This library is available from other sources. However, you will find our prices to be lower and our rental period longer. Also, DYNACOMP uses only one side of single-sided certified diskettes for data integrity. Other companies "go cheap" and use both sides, and then replace the ones that don't load.

| SUBJECT MATERIAL | VOLUME NUMBER |
|---|---|
| Applications | 23, 26, 33, 62 |
| Assemblers | 10 |
| BASIC utilities | 2, 3, 6, 7, 8, 9, 14, 22, 28, 48, 60, 66 |
| Business | 64, 65 |
| C language | 50 |
| Communications | 4, 5, 9, 16, 33, 34, 41, 42, 52, 54, 62, 67 |
| Data base | 4, 5, 75 |
| Demos | 1, 6, 11, 12, 15, 27, 53, 74, 75 |
| Diskette maintenance | 9, 22, 28, 34, 46, 50, 70 |
| Educational programs | 18, 27 |
| Financial programs | 25, 29, 40 |
| FORTH | 31, 32, 48 |
| Games | 1, 4, 11, 13, 14, 15, 16, 17, 18, 20, 21, 23, 24, 27, 35, 37, 39, 44, 45, 49, 51, 55, 61, 66, 71, 72 |
| Graphics | 13, 20, 27, 33, 38, 47, 69, 73, 74 |
| Pascal | 26, 30, 36, 74 |
| Printer control | 25, 33, 46, 52, 59, 61, 66, 70 |
| Scientific applications | 67 |
| Spreadsheet utilities | 14, 23, 64, 65 |
| Text formatting | 48, 49, 50, 59 |
| Text processing | 52, 57, 58, 59, 60 |
| Utilities | 2, 6, 19, 22, 26, 28, 33, 34, 46, 47, 49, 50, 51, 52, 53, 56, 61, 66, 67, 70, 73 |
| Word processing | 19, 38, 43, 53, 56, 60, 68 |

Below you will find mini-descriptions of each diskette in the collection. Note that these descriptions are very brief; each diskette is *loaded* with software, and only a few of the programs are mentioned as a sample.

**#1.** YAHTZEE, BLACKJACK, PATTERNS, KALEID, PONGPONG, and more!

**#2.** Spooler to allow use of computer while printing. Disk cleaning program and instructions for unprotecting a BASIC program. Typewriter emulator. Function key reassignment program.

**#3.** RATBAS, to allow the creation of structured BASIC programs. Supports named GOTO labels. Includes documentation file.

**#4.** DBMS, a data-base program, and MODEM7, a modem control program. Also SURVIVAL, an Adventure-type game.

**#5.** PC-FILE 9.0, a popular user-supported data-base program. Includes documentation (on diskette).

**#6.** FREE1 Ramdisk, reference guides for BASIC and DOS and several hardware checkout routines. Profiler routine for determining how much time is spent in which part of a BASIC program.

**#7.** EXPLIST: prints BASIC programs in an easy-to-read format.

**#8.** CROSSREF to print cross reference of variables used in a BASIC program.

**#9.** SQUISH to compact BASIC programs to reduce space and increase speed. CRK4, a file checksum program. WASH, a disk file maintenance program.

**#10.** CHASM 2.01, a user-supported assembler with tutorial and documentation.

**#11.** Color graphics demo. Heapsort demo. LANDER, DEFEND, NIM.

**#12.** More color graphics demo programs. To be used with diskette #11.

**#13.** STARTREK, PDRAW graphics draw program with documentation.

**#14.** BASMENU, an automatic menu-generating program. MENTOR, VisiCalc templates for taxes, plotting, and home budget. Bar chart creation program.

**#15.** PCMAN. COLORDEM, a good example of color graphics and animation written in BASIC.

**#16.** PC-TALK Modem communications package with documentation. MASTERMIND, CRAPS, and another STARTREK.

**#17.** SURVIVAL, MENTOR, BREAKOUT, and more!

**#18.** IQBUILD educational programs: reading, math, and language skills. Mastermind and TRUCKER games.

**#19.** RV-EDIT, a screen editor written in BASIC. Program control system.

**#20.** DRAW, color versions of HANGMAN, BLACKJCK, OTHELLO, YAHTZEE.

**#21.** PC-MAN using joystick, and PACGIRLA.

**#22.** CHECKDIR, a directory maintenance program. BMENU to create menu for running BASIC programs.

**#23.** League Secretary Bowling, STARWARS, VisiCalc tax template.

**#24.** TICTACTO, RUBIC, TOWERS, WUMPAS, JAMMER, OPERATOR, NEWTREK.

**#25.** 25 miscellaneous financial programs, printer utilities.

**#26.** Book index utility with Pascal source code.

**#27.** ZOO sort, an educational sort demo using color graphics. Also FOILS, TREK, and AUTHOR.

**#28.** DISKMODF to examine and modify any sector on the disk. VDEL to selectively delete disk files. Updated SQUISH program. Function key handler.

**#29.** Set of 15 financial programs. Calculate loan balance, critical paths, curve fitting, mean and standard deviation, income averaging, and more.

**#30.** PASCAL programs to demonstrate how to do disk I/O.

**#31.** MVP-FORTH – Mt. View Press Public Domain FORTH language.

**#32.** Screens for MVP-FORTH. Includes source code for FORTH editor and assembler. This disk is not a DOS file formatted disk. Must be used with MVP-FORTH disk #31 above.

**#33.** Modem and printer utilities. GRAFTRAX, a graphics printer dump. SCROLL to scroll specified area of screen. BSR remote control program.

**#34.** SDIR22 – directory list utility for DOS 2.0, PC-TALK enhancements. Source for RAMdisk program.

**#35.** STARS, GOLF, ZAP-EM, KINGDOM, TRAP, LEM, LANDER, STORY, DESERT, DECIDE.

**#36.** Pascal utilities – numerous examples of Pascal on the IBM.

**#37.** ATTACK, GALLERY, SPINOUT, and others.

**#38.** SPOOLER, FILTER, WordStar to DOS file conversion utility.

**#39.** JETSET flight simulator.

**#40.** Stock market analysis programs.

**#41.** Kermit communications package. Incorporates error correction protocols for use with compatible mainframe systems.

**#42.** Extensive documentation for Kermit system. 290K bytes.

**#43.** Exidy word processor demo with tutorial. Demo will do everything but save files.

**#44.** HOBBIT, BLKFR13, BIORYTHM, SLOT, MSQUARE, BANNER, HANOI, ROCKET, HORSE, CHASE, 21.

**#45.** AWARI, SQUARE, REVERSE, TRADE, FOOTBALL, HIDESEEK, SWARMS, TAXMAN.

**#46.** CLOCK screen formatting program. MEMDUMP memory dump program. HIDEFILE to undelete and unhide files. File download program. Printer parameter setup routines for C-Itoh and Epson printers.

**#47.** Wizards CASTLE game, FINPAK, graphics dump, PLOTing program. Mailing list program. Programs for setting and reading the Hayes chronograph.

**#48.** Runoff text formatter written in BASIC. Rubic's cube simulation. Another formatted BASIC lister. FORTH language written in BASIC.

**#49.** FINISH text formatter. HEARING tester, JOYSTICK, SPINOUT. On-screen digital clock. Calendar program.

**#50.** Text formatter written in C assembly language source code for SDIR disk directory program.

**#51.** HYPERDRIVE RAM disk with source code. GOMUKU in Pascal, FOUR (game). Future date prediction routine.

**#52.** Utilities for cleaning up downloaded programs. Program for packing and unpacking in HEX format for communications of binary files. Several printer and keyboard utilities.

**#53.** BASIC programs to generate many different sounds, WordStar utilities, number base conversion program and sort demos.

**#54.** XMODEM with source code. Modifications and tutorial for IBM Asynchronous Communications Program.

**#55.** CRAZY8, IPOKER, HRSERACE, LANDER (using color), JET-PILOT, BIO, ROULETTE.

**#56.** Keyboard utilities, DISTAR, SPEECH, Print proverbs. Mini word processor.

**#57.** Text Processing tools – Volume 1. TRANSLIT, SORT, FIND, CHANGE, and COMPARE. Programs on this disk and #58 were derived from the book "Software Tools in Pascal".

**#58.** Text processing tools – Volume 2. FORMAT, DEFINE, MACRO, EDIT.

**#59.** PEPSON text formatter. Fast screen print routine and a quick reference template generator.

**#60.** Several user-supported programs. UTIL, a program to manipulate text files. MAKE to convert Easywriter 1.1 text files into DOS file format. BASREF to produce BASIC cross reference listing.

**#61.** PRINTGR, a program to dump graphics on printer in a vertical or horizontal format (source code provided), several IPCO games and utilities. STATCAPS, a color graphics state capital matching game.

**#62.** Programs for handling a mailing list, cash accounting, and home inventory. PC-TALK II mods.

**#63.** Removed: in violation of copyright laws.

**#64.** DESKTOP Vol. 1 – Managers' desktop template for use with Lotus 1-2-3 version 1A.

**#65.** DESKTOP Vol. 2 – Documentation and instructions for DESKTOP template on #64.

**#66.** Ginaco programs – 56 utilities and demos. Too many to list. Printer utilities, games, conversions, demos – a good introductory disk. Programs may be selected from a menu.

**#67.** PC-TALK 2.0 modifications. NONLIN to perform a non-linear least-squares fit to data. Simple plotting program. Label maker.

**#68.** Wordflex word processor. Finally a user-supported word processing system rivaling those costing many times more.

**#69.** Designer – a user-supported graphics system to create graphics and animation on color display.

**#70.** DISKCAT cataloging program. Sort and directory manipulation programs. Epson printer demos.

**#71.** MEMORY, SPELLER, WIZARD, LOSTGOLD, DROIDS, and more!

**#72.** DOCTOR, ROADRALY, TICTACTO, FIFTEEN, RUBIK, and more!

**#73.** 3-D Graphics. WINDCHIL calculator. Subroutines to test and set shift keys from BASIC.

**#74.** Library of Pascal callable utilities with manual on disk. Some sample object modules which may be included in user programs.

**#75.** Interactive demonstration of the Forms Manager data-base program.

**#76.** History, education – Quest to create new lessons. Data files for HISTORY.BAS.

**#77.** IRD – Modem communications from author of PC-FILE. Setup command and batch file for printing documentation.

**#78.** PC Write – condensed manual, expand, EO, PR, and DOC files.

**#79.** RAM Drive – quad RAM, KEYLOC, graphics designer, utilities, and games.

**#80.** Utilities – ALTER, ASK, BIGANSI, COLOR, EDITNO, and too many others to list.

**#81.** Communications HOST 2 upgrade, MODEM, SCNMAT, SORTS, UNWS, and others.

**#82.** Batch file utilities – too many to list.

**#83.** Utilities, games, graphics.

**#84.** Utilities: CHMOD, DOWDIF, DRAWIT, FILECMD, FPR, KILL, QPRINT, TXTPRO, and how to unprotect VisiCalc.

**#85.** VisiCalc templates and SORTDIF sort programs.

**#86.** Screen text editor – AUTOEXEC, MMOUSE, SCREEN, PRTLPTI, and INSTALL.

**#87.** Programmer's Calculator – GC, MANUAL, and DUP to copy files to another disk.

**#88.** EPISTAT Statistical Package – too many files to list.

**#89.** Tools – COLOR, Mailmerge, mini calc, MSPOOL, PC file, VOLSER (Volume Labels), XUP.

**#90.** Genealogy Package – 25 files.

**#91.** Adventure Game and others.

**#92.** Music – patterns on graphics display, sound generators and VISICALL load info.

**#93.** ASMGEN – games, loan analysis and flashcard drill.

**#94.** LADYBUG – a user-supported version of Logo.

**#95.** Math Tutor – enhanced version for 2.0.

**#96.** The SOURCE Introduction – 9 files.

**#97.** The SOURCE – 18 info files including accessing BBS.

**#98.** SOURCE/COMPUSERVE Phone numbers as of November, 1983.

**#99.** Public BBS/COMPUSERVE IBM-SIG as of 11/83.

**#100.** BAGPIPES, JUKEBOX (music), ALIEN, 3D, TICTACTO, several adventures.

## THE ANTIC PUBLIC-DOMAIN SOFTWARE LIBRARY

(Atari only)

*Good news for Atari and Atari XL owners!*

DYNACOMP now distributes the public-domain software library compiled by *ANTIC* magazine. These diskettes contain classic computer programs translated to the Atari (with enhancements) as well as material written specifically for that machine.

The library presently consists of 12 well filled diskettes covering games, utilities, graphics, and music. *ANTIC* distributes these diskettes for $10.00 each. DYNACOMP, because of its higher volume/overhead ratio, offers them for only $7.95 each, an exceptional value. Also, DYNACOMP has a discount for purchasing the entire 12-diskette collection: $69.95 for the complete set (sorry, these items cannot be used towards DYNACOMP's 10%–20% quantity discounts.).

Be sure to carefully identify which diskettes you want. No manuals are included. The programs are generally self-prompting, or magazine references are given.

*ANTIC* GAMES: Diskette #1
- CHICKEN
- HANGMAN
- CREATION
- REVERSE
- MONOPOLY
- LUNAR LANDER
- ZONEX
- CLEWSO

*ANTIC* GAMES: Diskette #2
- SPEED DEMON
- DEATH STAR
- BLACKJACK
- CIVIL WAR
- ARTILERY



- SUPER WUMPUS

*ANTIC* GAMES: Diskette #3
- PETALS
- SHOWDOWN
- FROG
- DRAW
- PLUS ZERO
- COLLOSI

*ANTIC* GAMES: Diskette #4
- VULTURES
- CASTLE HEXAGON
- ADVENTURE
- ADVENTURE CREATOR

*ANTIC* GAMES: Diskette #5
- BATS
- STELLAR DEFENSE
- YAHTZEE
- MASTERMIND
- HAMURABI
- SLALOM
- COUCH
- ACEY-DEUCY

*ANTIC* GAMES: Diskette #6
- DOC
- MICROASSEMBLER
- ASSEMBLE-EDITOR (in BASIC)
- RENUM
- MEMTEST
- COLOR
- PARALLEL PRINTER

*ANTIC* GAMES: Diskette #7
- BUBBLE SORT
- TYPO
- HOME INVENTORY
- CIPHER
- RENUMBER
- COMPARE
- SUPER MENU
- MODEM
- REAL-TIME CLOCK

*ANTIC* GAMES: Diskette #8
- DISASSEMBLER
- TINY TEXT
- GTIA TEXT WINDOW
- EPSON LABEL
- MX80 VISICALC PRINTER SETUP
- KEYBOARD TUTORIAL

*ANTIC* GAMES: Diskette #9
- SPIDER
- RAINBOW
- HORSES
- ATARI LOGO
- OXYGEN
- SPIRAL
- PRETTY
- MESSAGE

*ANTIC* GAMES: Diskette #10
- GRAPHIC
- DRAW
- RAINBOW
- TUNE RITE
- ETCH SKETCH
- BABY PRO SOUND

*ANTIC* GAMES: Diskette #11
- PRELUDE
- JOPLIN
- IN MY LIFE
- STAR TREK
- DAISY
- GREENSLEEVES
- YELLOW SUBMARINE
- AND MORE!

*ANTIC* GAMES: Diskette #12
- DIGITIZED PHOTOS

## ATARI
## PUBLIC DOMAIN COLLECTION #2
(Atari only)

We learn from experience. We introduced the ANTIC Public Domain collection in Catalog Number 26 and it was nicely received. That prompted us to search for additional material of the same type. This second collection of 38 disks is another "best buy". Each diskette is nearly full, and the programs are good to excellent. Individual diskettes may be purchased for $7.95 each, or the entire collection may be obtained for $199.95. Sorry, these diskettes may not be used toward DYNACOMP's 10%–20% quantity discounts. Remember to order by diskette number (e.g., PD #7). M/L = Machine Language.

**Diskette PD #1** Price: $7.95

| | |
|---|---|
| BEGINTYP | Improve your typing |
| BOING | Catch bouncing Barney |
| CANNON | 2-player cannon fight |
| CAPITALS | Learn the capitals |
| CUBES | Draw 3-D solid cubes |
| DDHELP | Dungeon & Dragon help |
| FILEREAD | Data-file reader |
| FUGE | Bach music for Atari |
| HURICANE | Hurricane locator |
| MATHPKG | Math functions |
| MLTOBAS | M/L to BASIC data conversion |
| RAYFLSR | Page flip GR. 7 demo |
| SIMON | Color/sound memory game |
| SPACE16 | GR. 8 graphics demo |
| STRNGART | Color graphics demo |
| TARGET | Shooting gallery |
| TESTPAT | TV test pattern generator |

**Diskette PD #2** Price: $7.95

| | |
|---|---|
| ALIENSHP | 2-player shoot the UFO |
| BRDGBLDR | Build-the-bridge game |
| CASDISK | Autoboot cassette-to-disk |
| CHEMISTRY | Chemistry drill |
| DULCIMER | Instrument synthesizer |
| HANGQUOT | Hangman guessing game |
| INVASION | Shoot invading UFO's |
| KEYBOARD | Friendlier keyboard: M/L |
| MESSIAH | Music & graphic song |
| OLDGLORY | Song & flag graphics |
| PUFF | Puff the Dragon song |
| RENUMBER | BASIC renumber utility |
| SPACEATK | Space invaders |
| SUMER | Lead a country: graphics |

**Diskette PD #3** Price: $7.95

| | |
|---|---|
| DEFENDER | Like the arcade game |
| DESIGNS | Geometric patterns |
| ELIZA | Psychiatrist computer |
| QUEST | Graphic adventure |
| SAUCERLA | Arcade space battle |
| SKETCH | Graphic drawing system |
| SPIRSWIR | Fast colorful swirls |
| STARBASE | Arcade space zap game |

**Diskette PD #4** Price: $7.95

| | |
|---|---|
| BASEBALL | Graphic baseball for 2 players |
| BIORTHM | Plot your biorhythm |
| BUMBLE | Flight of the bumblebee |
| CONVOY | WW-II shipping game |
| DAIRY | Dairy farm simulation |
| DODGE | Dodge the mines |
| METEOR | Dodge the meteors |
| TOPOGRPY | Draws 3-D topographic maps |

**Diskette PD #5** Price: $7.95

| | |
|---|---|
| DUMPER | Examine Atari's memory |
| HORSERAC | Horse racing game |
| JUPLANDER | Land on Jupiter's moons |
| MAROONED | Solar-system game |
| MAZE1 | Multi-level 3-D maze |
| MAZE2 | Giant Maze for MAZE1 |

**Diskette PD #6** Price: $7.95

| | |
|---|---|
| PRETTY | Multimode graphic demonstration |
| MARQUEE | Color rotation demonstration |
| ELLIPSE | Draws 3-D ellipses |
| MEMTEST | Test your RAM |
| TRONSOUN | 3 sounds from TRON |
| THROB | Pulsating color demonstration |
| ZIGZAG | Draws zigzagging patterns |
| UXB | Diffuse bombs arcade game |
| POLARGRA | Plots polar graphics |
| XIOFILL | XIO demonstration |
| DIAMONDS | Random high-resolution patterns |
| DRAW400 | Portrait of Atari |
| SOUNDS | Sound routine designer |
| LASERGUN | Protect your Ion wall! |
| OUTPOST | Survive against the sea |
| SPIDER | Like Etch-a-Sketch™ |
| FLICKER | Page-flip graphic demonstration |
| SPIRAGA | GR. 8 spirals TV/MX-80 |
| TRIANGLE | Nice color graphics |
| DICEGAME | Gamble on dice rolls |
| SURVIVE | Super arcade game! |

**Diskette PD #7** Price: $7.95

| | |
|---|---|
| FORTH 1.4 | Source code for FORTH |

**Diskette PD #8** Price: $7.95

| | |
|---|---|
| FORTH 1.4 | Intro and demos for FORTH language |

**Diskette PD #9** Price: $7.95

| | |
|---|---|
| JTERM | Start terminal software: Comm. |
| JTERMTXT | Documentation for JTERM: Comm. |
| LOANS | A group of 28 business programs for investments, loans, depreciation, etc. |

**Diskette PD #10** Price: $7.95

| | |
|---|---|
| SALT2 | An extensive testing program for Atari 400/800 |
| FLAWTEST | Disk read/write test: Utility |
| RPMTST | Check your disk RPM: Utility |
| BLKRABIT | Duplicate diskettes fast! Utility |

**Diskette PD #11** Price: $7.95

| | |
|---|---|
| WAR | Game of global conflict |
| AMODEM | Smart terminal software |
| WATRFALL | GTIA graphic demonstration |
| MYRAPEDE | M/L centipede game |
| HOLLYMED | M/L graphics & sound demonstration |
| PINBALL | Pinball arcade game |
| VULTURES | Quality arcade game |
| KNIGHTS | Graphic adventure |
| TIMETRLS | Arcade race car driver |

**Diskette PD #12** Price: $7.95

| | |
|---|---|
| CHUTES | Arcade dodge 'em game |
| MANIAC | M/L arcade shoot-out |
| HARVY | Interesting M/L arcade game |
| TRUCKER | Truck driving simulation |
| TREE | Program in PILOT language |
| BOGGLER | A 2-player game |
| FILLERUP | M/L 'QIX'-like arcade game |
| OPART | Impressive graphic art |
| MDNITRIP | Night driver arcade game |
| MOTIE | GTIA graphic game |
| ORGAN | Musical Atari |

**Diskette PD #13** Price: $7.95

| | |
|---|---|
| TBIRD | Upside-down breakout |
| SGTPEPR | Beatles songs |
| WILDWEST | Catch the falling bombs |
| TIGER | Watch out for that tiger! |
| DARKTOWR | An adventure game |
| PROGLIB | Catalog your diskettes |
| ADVENTUR | Graphic adventure |
| PROGSORT | M/L sort for PROGLIB |
| DISKLABL | Make your own labels |

**Diskette PD #14** Price: $7.95

| | |
|---|---|
| NSLAUGHT | M/L Space arcade. NICE! |
| STARSHOT | Arcade star wars |
| FILEINDEX | Neat disk-indexing package |
| BATS | Navigate through caves |
| FAUCET | Nice GTIA demo |
| MENUMKR | Disk menu maker |

**Diskette PD #15** Price: $7.95

| | |
|---|---|
| STELLAR | Defend the Humans! |
| AMODPLUS | Supersmart modem |
| YAHTZEE | Multiplayer Yahtzee |
| AUTODIAL | Autodial with your Atari |
| AMDOC | Info for AMODPLUS |
| DOGGIES | Graphic game |
| CONCENTER | Concentration game |
| BATCAVE | Graphic dodge-the-bats game |
| FROGGIE | M/L "Frogger" arcade |
| TRAGEDY | Multiplayer dice game |

**Diskette PD #16** Price $7.95

| | |
|---|---|
| SMOKEY | Smokey & Bandit game |
| JELFISH | Catch the fish |
| ASTROSTM | Dodge the asteroids |
| MONOPOLY | Neat! multi-player! |
| LONEAGLE | Stop the horse thieves |
| PARATR | Knock out the paratroops |
| GALACTIC | M/L Galactic Chase. Super! |
| RPMTEST | Check out your disk |
| SMALLDOS | BASIC DOS system |
| DUPFAST | Fast disk copy system |

**Diskette PD #17** Price $7.95

| | |
|---|---|
| STICKTST | Test your joysticks |
| DUPL2D | Disk duplicating program |
| CRICKETS | Neat BASIC & M/L game |
| CRYPTO | Cryptogram puzzles! |
| CHICKEN | Cross that highway! |
| GRAVITY | Great eye/hand test |
| BLKJACK | Graphic blackjack game |
| PENTE | Multiplayer board game |
| STONED | Sound/graphic demo |
| ATLASCAN | Atlas of Canada. Nice! |

**Diskette PD #18** Price $7.95

| | |
|---|---|
| SABTAGE | Can you break through? |
| ATTACK | Space invaders! |
| DARTS | Throw darts. Graphic. |
| BATLSHP | A phone modem game! |
| WORDHUNT | Word puzzles |
| DEMON | Race car driver |
| TAPEDUPE | Backup your M/L tapes |
| GR10PNTR | GTIA painting program. NICE! |
| LIVEWIRE | M/L Tempest Arcade! |
| SOLITAR | Great graphic card game |

**Diskette PD #19** Price $7.95

| | |
|---|---|
| LASERBAR | Zap those alien ships |
| CRAZY8 | Neat graphic card game |

**Diskette PD #20** Price $7.95

| | |
|---|---|
| HOOKEY | Q'bert clone |
| ESCHERSK | Produce weird graphics |
| SAFRYLND | Advanced Kingdom |
| GRUBS | Kong-like capture game |
| NEWDUPSYS | Advanced Atari DOS 2.1 |
| ICECAVES | Inside the 3-D maze |
| SOUNDLAB | Design sound effects |

**Diskette PD #21** Price $7.95

| | |
|---|---|
| DRAGON | Burn those mutant apples! |
| CHOMPER | Chomp those dots! M/L |
| ROUNDUP | Just like in rodeos! M/L |
| DTESTEXE | M/L 810 disk test system |
| MONSTER | D & D type adventure |
| MENUPLUS | Super disk menu system |
| SEADRAGON | Neat graphic demo of game |

**Diskette PD #22** Price $7.95

| | |
|---|---|
| SWORDEMO | Graphic multicolor demo |
| MAGIC | Neat GTIA demo!! |
| FORMATIX | EZ disk formatting system |
| AURABALL | SUPER deluxe pinball! M/L |
| DOS3 | Weird DOS SYS! |
| SNAKE | How long can you survive? |
| CARDFILE | Home filing system |
| RUBKCUBE | Solves your cube! |

**Diskette PD #23** Price $7.95

| | |
|---|---|
| ONELINER | 23 graphic demos |
| DISKTEST | Test your drive and disks |
| MISSION | Mission Impossible theme |
| DEMO | Color graphics demo |
| SHERLOCK | Action adventure maze |
| DEDITOR | Disk sector editor |
| CATMOUSE | Can you evade the cats? |
| DIGIDRAF | Graphics painter and options |

**Diskette PD #24** Price $7.95

Graphics Slide Show!
A disk full of high-resolution digitized photographs.

**Diskette PD #25** Price $7.95

| | |
|---|---|
| PASSION | NEAT music/graphics M/L! |
| CALENDAR | Calendars from 1582 on ... |
| XMASSONG | Atari composes your words |
| HOPPER | M/L Frogger! Nice! |
| NIGHTFLY | Aircraft simulation |
| XMSMUSIC | Music and graphics demo. Nice! |
| SNOW | More music and graphics! |

**Diskette PD #26** Price $7.95

50 music programs with BASIC-M/L song player. Also use with your Atari Music Composer cartridge.

**Diskette PD #27** Price $7.95

| | |
|---|---|
| TVTEST | Test and align your TV |
| GAMBLER | Las Vegas comes to you! |
| RECTRO | Land on IO. Graphic M/L |
| JACKPOT | Play the one-armed bandit |
| STRESS | Measure your stress |
| MOZART | Let Atari compose music |
| DISKCASS | Dump binary files to tape |

**Diskette PD #28** Price $7.95

Advanced Music Player and popular tunes like Maniac, M.A.S.H., Classical Gas, Stairway to Heaven, and more.

**Diskette PD #29** Price $7.95

| | |
|---|---|
| DUNGEON | Scott Adams-like adventure |
| POLYCOPY | Multi-file copy utility |
| PINETOP | Neat musical program |
| MLMENUMK | Build fancy menu for M/L |
| MAPLFRAG | Scott Joplin tune |
| WORDSRCH | Nice educational puzzle |
| MEMORY | Concentration-like game |
| NERDII | Are you a computer nut? |

**Diskette PD #30** Price $7.95

More Advanced Music tunes and player with Men at Work, theme songs from The Sting, Hill Street Blues, Knight Rider, and more!

**Diskette PD #31** Price $7.95

Nine SUPER MicroPainter-type pictures with special auto-run viewer. Impressive!

**Diskette PD #32** Price $7.95

| | |
|---|---|
| PMDESGNR | Player-missle designer |
| ELECTRIC | Track your electric bill |
| ADVENT5D | Adventure in the 5th dimension |
| TITAN | Planet mining simulation |

| | |
|---|---|
| TITAN.DOC | Documentation for TITAN |
| PROGOLF | Graphic golf game |

**Diskette PD #33** Price $7.95

| | |
|---|---|
| WORLDPWR | Game of world domination |
| FONTEDIT | Nice character set editor! Utility |
| PENCILS | M/L Graphics demo |
| CENTURIN | Arcade space battle game |
| POKERSOL | Solitare poker. Graphics |
| KNIGHTS | Adventure simulation game |
| SYN.OBJ | Very nice music composer player. Plays Atari Music Composer files such as on PD #26. |
| STARTREK | The Movie theme song. For SYN.OBJ |
| JOPLIN | Scott Joplin song for SYN.OBJ |

**Diskette PD #34** Price $7.95

Binary (machine/language) programs!
Includes favorites like AURABALL, RECTROFIRE, GALACTIC CHASE, MYRAPEDE, ONSLAUGHT, FROGGIE, and RACE IN SPACE! Over 70K of great machine-language fun! Includes colorful autorun menu.

**Diskette PD #35** Price $7.95

| | |
|---|---|
| GRAB | Grab those apples! |
| BOXES | 2-player fun! |
| STARS3D | Impressive M/L effect |
| EPSET | Epson printer codes |
| PHONE | Track that phone bill |
| ATARI | GTIA graphic demo |
| ORGAN | Play the organ on Atari |
| SNOWDEMO | Nice GR. 8 graphics demo |
| NATURE | Educational quiz |
| MASMIND | Master Mind game. Nice! |
| GR8TXT | Mix graphics with text |
| GTIADEMO | GTIA graphic demo |
| DOGGIES2 | Improved version. Neat! |

**Diskette PD #36** Price $7.95

| | |
|---|---|
| QUEST | A major disk-based adventure! |

**Diskette PD #37** Price $7.95

| | |
|---|---|
| AMODPLUS | An advanced modem program |
| AUTODIAL | Automatic dialing program |
| TSCOPE | Telephone battleship program |
| SCANNER | Scans local phone numbers |
| *.DOC | Documentation for above |

**Diskette PD #38** Price $7.95

| | |
|---|---|
| HYPNOSIS | Mesmerizing pattern generator |
| BATLRING | M/L space arcade |
| TRON | M/L light cycle arcade |
| CRASHDIV | Submarine adventure |
| REPAIR | Fix bad disks |
| SYSTATUS | Displays system status |

## IMPORTANT NOTICE

Look at the address label on this catalog. If there is an asterisk (*) in front of your name, this may be your last free DYNACOMP catalog. If you wish to continue receiving the DYNACOMP catalog, please fill out and mail the form which appears on the inside of the back cover of this catalog.



### APPLESAVER™ FAN

Quite frankly, most Apple IIs do not need a fan to keep them cool. They run warm, but not so hot as to create a problem. However, if you also have extra boards plugged in, or are doing a significant amount of disk access (the disk drives are powered by the computer) the insides of your Apple II can heat up. A rule of thumb (the Arrhenius relation) predicts that the component failure rate should roughly double for each 10°F increase in temperature. Therefore it *pays* to keep your computer cool.

The APPLESAVER™ FAN does just that. It attaches to the side of your Apple using two plastic clips which slip into the air slots. Air is drawn across the inside back of the machine. The fan itself is *very* quiet, though effective. Also, the back of the unit contains two grounded AC sockets for plugging in your computer, monitor, etc. The front has a power switch (Apple type) and indicator lamp. Therefore you need only flip the fan switch to turn on your system as well as the fan.

the APPLESAVER™ FAN is very well built. The fan itself is of high quality, and the molded plastic housing is of the same material (and color) as the beige apple case. We use these units ourselves.

Now for the really good news. Similar Apple fan units have been advertised nationally for $89.95. DYNACOMP's price is only $49.95! Comparison shop, and you will find our price to be exceptionally low.

Price: $49.95

Dealer inquiries invited. We're going for *volume* on this one!

### DYNACOMP DISCOUNT

Remember the DYNACOMP quantity discount. Take 10% off for 3 or more programs; take 20% off for 5 or more! See the order page for details.

### SUPER ZAP™

(CP/M and IBM only)

Here is a disk dump and patch program that really lets you get your hands on the bits! SUPER ZAP™ provides many powerful features, yet it combines menu control with two-dimensional screen interaction for exceptional ease of use. It features a full screen display of disk records by absolute sector number, or by file and sector. It displays data in hex, octal, or ASCII. You can position the cursor with function keys and change any byte using any data format. SUPER ZAP's features include searching for sequence of data bytes in file or entire disk, dump sector contents to line printer or data file. CP/M version supports display and patch program file by memory address. SAVE FILE lets you store selected sectors for input by other programs. The CP/M version is menu-configurable for your system and terminal.

Requires 48K and cursor-addressable 80-column screen.
Not available for CP/M 3.0.
MSDOS version is available for IBM PC and PCjr. only.
Not available for Osborne Executive.

Price: $24.95 Diskette
$27.45 8-inch CP/M Disk

Written by Software Toolworks

## NORTH STAR SOFTWARE EXCHANGE

Price: $ 9.95 per Diskette (Single Density)
$12.95 per Diskette (Double Density)

Package price: $159.95 (single density)
$199.95 (double density)

NSSE diskettes are discounted separately from DYNACOMP's other programs.

To improve its service to North Star users, DYNACOMP is now distributing the NSSE diskette library. This library consists of quite a few diskettes, each of which contains several programs. These programs are not DYNACOMP products, and their quality spans the full range of trivial to very useful. Also, the visual presentation in most cases is not up to commercial standards. In addition, there is no accompanying written documentation. However, in almost all cases the programs are self-explanatory and/or notes have been included on the diskette. The saving grace is that what many of these program diskettes lack in quality they certainly make up for in concepts and quantity.

To aid you in choosing from this collection, DYNACOMP has briefly reviewed most of the software and has prepared a short outline of the contents of each volume, along with recommendations. DYNACOMP has included this software in its product line because it contains many programs which are well worth the purchase price. However, be forewarned that some of this software may not work correctly and that DYNACOMP does not support this software other than replacing deffective diskettes.

Recommendation Scale: 1 — Not Recommended
10 — Highly Recommended

### NSSE Volume #1 GAMES

Contents: CHOMP, LUNAR, SLOTS, MATCH, WUMPUS
Description: : An old collection of games. Could serve as the basis for expanded versions.
Recommendation Level: 3

### NSSE Volume #2 UTILITIES

Contents: 19 programs, the most notable of which are HEAPS (a number sort) and ALPHSORT (a word sort). Also contains some file manipulation programs.
Description: This is an interesting set of routines which can be used either directly or included in other programs.
Recommendation Level: 6

### NSSE Volume #3 GUESSING GAME

Contents: 2 BASIC programs, 2 notes files, and 5 data files.
Description: An elaborate guessing game related to "20 Questions". A good value.
Recommendation Level: 7

### NSSE Volume #4 MATH ROUTINES

Contents: FFT, matrix inversion plus 3 others.
Description: A collection of simple math routines. Useful if you do not already have them.
Recommendation Level: 5

### NSSE Volume #5 PILOT programs

Content/Description: Various PILOT machine-language programs, apparently as they appeared in Dr. Dobb's.
Recommendation Level: Not Reviewed

### NSSE Volume #6 HODGE-PODGE #1

Contents: LIBRARY, MAILER, INTRATE, CHECKBOOK, BIORHYTHM plus support files and notes
Description: This is an exciting volume. The diskette library, mail list and checkbook routines have some nice features (as well as a few bugs. e.g. the mailing label print-out format in MAILER). Someone with programming experience could make some very nice programs out of these. The interest rate program is very nice; good for mortgage calculations. The biorhythm program is basic in its operation.
Recommendation Level: 9

### NSSE Volume #7 VIDEO GAMES

Contents: NUMGUESS, KALEID, MATCHES, BLACKJ, TICTAC, KING, UKALEID, and BAGELS
Description: This is a collection of simple games which are meant to work with the SOL computer (or an S-100 machine with a VDM-1 video display board.
Recommendation Level: Not Reviewed

### NSSE Volume #8 GAMES

Contents: OTHELLO, ZOO, HAMURABI, GUNNER, ICBM, TREKI6K, STARTRK1 plus notes files
Description: Basic games collection. Well worth the price.
Recommendation Level: 6

### NSSE Volume #9 UTILITIES

Contents: HEXCALC, RENAME, DIRRED*, DIWRITE*, CRUNCHER, MOVAVG, DASM
Description: The starred programs were written before the new DOS. They are obsolete. RENAME permits directory name changes. CRUNCHER does elementary BASIC program compaction. DASM is an 8080/8085 disassembler.
Recommendation Level: 8 (DASM by itself is worth the price)

### NSSE Volume #10
### COMMON BASIC FINANCIAL PROGRAMS (OSBORNE)

Contents: Translated (to North Star BASIC) programs from the above text.
Description: Financial programs
Recommendation Level: 10 (Highest)

### NSSE Volume #11 LIFE EXPECTANCY/CAPITOLS QUIZ

Contents: LIFETIME, STCAPS, WORLDC plus support files
Description: LIFETIME asks questions (e.g., are you a smoker?) and calculates your life expectancy. The capitols programs are guessing games. This volume has good educational value.
Recommendation Level: 7

### NSSE Volume #12
### MORSE CODE PRACTICE and FILTER DESIGN

Contents: No programs, mostly notes and data files. The two key programs are CODE and FILTER.
Description: The morse code practice program outputs a TTL level signal through the users parallel port. The program files are very extensive — a must for ham radio enthusiasts. The filter program permits the design of active filters using standard RC components and op-amps. Included is a plot of the filter response.
Recommendation Level: 10 (either program is worth the price if you can use it.

### NSSE Volume #13 GAMES

Contents: SNARKO, FROG, HANOI, ACEYDUCY, BRIDGE, CHECKERS
Description: Simple, unadorned games. BRIDGE simply deals hands. As a collection, they are worth the price.
Recommendation Level: 5

**NSSE Volume #14 and # 15**
**COSGROVE BIOLOGICAL LAB DATA ANALYSIS SYSTEM**

Useless without extensive documentation.

**NSSE Volume #16 PILOT**

See Volume #5

**NSSE Volume #17 HODGE-PODGE # 2**

Contents: LPTEST, DISKTEST, STOCKRPT, SPELLING, CURVETXT, CURVEFIT, SYNDIV
Description: The first two test disk seeking and the line printer. STOCKRPT is a stock evaluation program. SPELLING is a spelling drill. CURVETXT and CURVEFIT do least squares curve fitting. SYNDIV performs polynomial synthetic division. Again, as a collection this volume is well worth the price.
Recommendation Level: 6

**NSSE Volume #18 VIDEO GAMES**

Contents: DRAW, PICTURE, FIGHTER, BATLSHIP, GASP!, CHASE, YAHTZEE, REACT
Description: Games designed to be operated with memory-mapped video (e.g., VDM-1)
Recommendation Level: Not Reviewed

**NSSE Volume #19**
**SOME COMMON BASIC MATH PROGRAMS (OSBORNE)**
**Part A**

Contents: 17 programs from the above text
Description: MATH
Recommendation Level: 10 (an excellent choice)

**NSSE Volume #20**
**SOME COMMON BASIC MATH PROGRAMS (OSBORNE)**
**Part B**

Contents: 13 more programs from the above text.
Description: MATH
Recommendation Level: 10 (an excellent choice)

**NSSE Volume #21**
**SOME COMMON STATISTICAL PROGRAMS (OSBORNE)**

Contents: 19 programs from the above text
Description: STATISTICS
Recommendation Level: 10 (an excellent choice)

**NSSE Volume #22**
**SOME COMMON BASIC PROGRAMS (OSBORNE)**

Contents: 19 programs from the above text.
Description: Miscellaneous
Recommendation Level: 10 (an excellent choice)

**NSSE PO1 PASCAL PROGRAMS**

Contents: RANDOM, RUSSIAN, SYNTAX.ERRORS, TEXTPR, DOSDIR plus two others
Description: RANDOM is a psuedo random-number generator. RUSSIAN is a game of chance. SYNTAX.ERRORS is a file of the syntax errors possible in a PASCAL program. TEXTPR uses PASCAL to create margin-justified text. DOSDIR builds a DOS directory of the PASCAL directory.
Recommendation Level: Not reviewed, but sounds good for North Star PASCAL users.

## EAMON ADVENTURES

(Apple 48K disk only)

The EAMON Dungeons and Dragons™ series is a collection of public-domain programs written using the EAMON designer and utilities disks (also available through DYNACOMP). Each adventure is a fantasy role-playing game. With your help the computer generates your character and plays him (or her). To play any of the 42 adventures you need the EAMON MASTER, which includes BEGINNERS CAVE. To design your own adventures, you will need EAMON DESIGNER, which includes instructions (on the disk). Also very useful are the utility disks. DYNACOMP's prices for these programs simply reflect our operating costs:

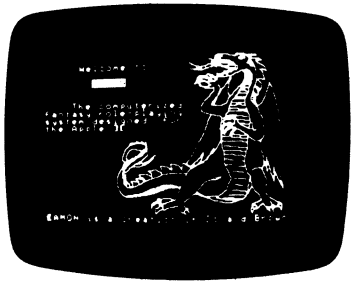
Price: $5.00 per Diskette (1-4)
$4.00 per Diskette (5-9)
$3.75 per Diskette (10+)
Price for entire 46-diskette collection is $150

The prices for these diskettes are too low to permit inclusion of this series in our usual 10% – 20% quantity discount. Sorry!

The Collection:

A. EAMON Designer
B. EAMON Utility #1
C. EAMON Utility #2
D. EAMON Utility #3
1. EAMON Master/ Beginner's Cave
2. Lair of the Minotaur
3. Cave of the Mind
4. Zyphur River Venture
5. Castle of Doom
6. Death Star
7. Devil's Tomb
8. Abductor's Quarters
9. Assault on the Clone Master
10. Magic Kingdom
11. Tomb of Molinar
12. Quest of Trezore
13. Caves of Treasure Island
14. Furioso
15. Heroes Castle
16. Caves of Mondamen
17. Merlin's Castle
18. Hogarth Castle
19. Death Trap
20. Black Death
21. Quest for Marron
22. Senator's Chambers
23. Temple of Ngurct
24. Black Mountain
25. Nuclear Nightmare
26. Assault on the Mole Man
27. Revenge of the Mole Man
28. Tower of London
29. Lost Island of Apple
30. Underground City
31. Gauntlet
32. House of Ill Repute
33. Orb of Polaris
34. Death's Gateway
35. Lair of Mutants
36. Citadel of Blood
37. Quest for the Holy Grail
38. City in the Clouds
39. Museum of Unnatural History
40. Daemon's Playground
41. Caverns of Lanst
42. Alternate Beginner's Cave

Note: Numbers 1–4, 6–9, 11, 12, 15, 17, 19, 24, and 32 have a game-save feature. Number 32 contains obscenity and is not recommended.



# ADVENTURE GAMES

## THE CP/M GAME DISK
(CP/M only)

DYNACOMP has long been the major source of diversified software for the CP/M environment. In particular, DYNACOMP is one of the few companies which supplies games for general CP/M machines.

Usually our games require Microsoft BASIC to operate. This group is an exception. The three games contained on THE CP/M GAME DISK are written in machine language and will run under any CP/M system having an 8080/Z80 compatible microprocessor (e.g., Xerox 820, Altos, North Star, Osborne, etc.). In addition, these programs utilize the cursor controls of your video terminal. This is accomplished by running an "installation" program which allows you to choose a particular terminal, or define your terminal characteristics. Cursor control is required because two of the games are arcade in nature.

THE CP/M GAME DISK contains three different programs:

1. THE GAME ADVENTURE: This is a very large adventure program which has several features. For example, you not only open doors, pick up and drop things, etc., but you also meet people and have conversations. Also, part of the game is to figure out what the goal is, based on clues you are given (messages, comments from people you speak to, etc.). This is quite an involved game, and will take many sessions to solve (you may save your current game and continue it later).

Age range: 12 and up

2. ALLEY CAT: This is an arcade game which uses alphanumeric characters to create a PACMAN™-like animation. The effect is surprisingly good. Your cat is roaming the streets trying to find fish in garbage cans. However, there are fast taxicabs also cruising those streets. Your goal is to go *chomp* and not *splat*.

For players ages 10 and up.

3. BOWLING: This is another arcade-like game. It is fairly simple. You have to position your ball and then deliver it. It will then roll down the alley and hit pins. The computer keeps score.

Age range: 8 to 13

Requires at least 54K, a video terminal (display), and one disk drive.

Price: $19.95 Diskette
$22.45 8-inch CP/M Disk

## UNCLE HARRY'S WILL
(North Star, CP/M, and IBM only)

Uncle Harry has died! You are called to his house on the east coast of the country to hear the will. The will leaves everything to you! The only problem is that he failed to tell where "everything" is located. Not even a map! The only thing that might help is a poem which gives clues on where to look. You will have to travel by both car and foot from coast to coast and border to border to solve this ADVENTURE. There are over 300 locations. This game requires a 40K system. Be careful and watch out for red herrings! Good Luck! Price: $24.95 Diskette
$27.45 8" CP/M Disk

## WHEMBLY CASTLE ADVENTURE
(North Star only)

John Whembly was a knight, pirate, and RICH! He owned a large castle located on an island in a small lake somewhere in jolly old England. Before he died, he hid somewhere a chest of gold coins (or so it is claimed). Many people have tried to find it but none have succeeded. Maybe you will have better luck!

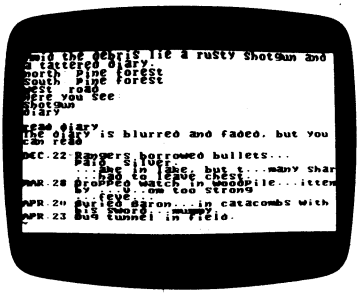
Price: $19.95 Diskette

## GOTHMUG'S LAIR
(Commodore 64 only)

GOTHMUG'S LAIR is a real-time *large* adventure. It comes with an illustrated manual featuring a fold-out map. You must overcome menacing monsters, kniving villains, tattered code books, and treacherous terrain in your quest for thirteen treasures. Use the 200-word-plus vocabulary to find your way through over 80 areas, escape over a dozen monsters, and locate (and use) more than 70 objects. This is a "thinking" adventure, heavy on strategy.

Price: $39.95 Diskette

Sample display:

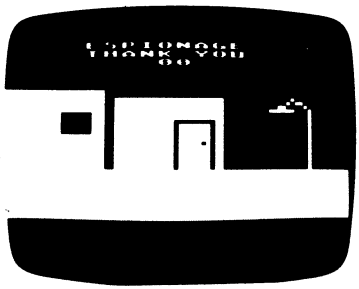



## ESPIONAGE
(Atari only)

ESPIONAGE is an action game in which you play the role of a secret agent sneaking into a criminal's hideout. You must capture the secret plans which could affect the future of the entire world. Using your joystick you jump over and duck under various hazards, searching for hidden clues with which to find and open the safe where the plans are kept. When you get to the safe, don't relax; you still have to open it and get out of the building. Play with 15 different variations. Requires one joystick and 32K in the cassette version, 48K in the diskette version.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:



## DO-IT-YOURSELF ADVENTURE KIT and DORMAC'S CASTLE

(TRS-80 only)

Here is a package which should interest the computerist who wants to get involved in building computer adventures. This kit provides the data file and screen display management software required to build a modestly sized adventure program which has the following characteristics:

- 94 rooms (locations) with up to 4 doors (ties) each.
- 4 key rooms (needing special objects to get into)
- 2 disaster rooms (random deaths)
- Unlimited number of darkness rooms (needing flashlight, etc.)
- 15 help objects
- 10 treasures
- (up to) 192-character room descriptions
- creatures, traps, clues, home base, etc.
- verb/noun commands ('GET LAMP')
- "Save game in progress" feature

This kit allows quite a bit of variety in creating adventure games. The kit also includes DORMAC'S CAVE, an adventure game built using the kit.

Requires 48K.

Price: $29.95 Diskette

## GUMBALL RALLY ADVENTURE

(North Star, CP/M, and IBM only)

The GUMBALL RALLY ADVENTURE is based loosely on the movie "Gumball Rally". It is an outlaw race from the East Coast to the West Coast by any route you choose. You can go as fast as you want; but, if you crash or get thrown in jail for reckless driving, you lose! Ordinarily, you would have a map to plan your route; but, as every true adventurer knows, you must draw your own map! In the movie, the winner won a gumball dispenser of the type you used to find on the sidewalk in front of drugstores. Hence, the name.

In this adventure, your goal is to first find your way to the finish line, and second to maintain the highest possible speed on all roads. Your choice of vehicle will determine your maximum speed and your range. (Big-engined cars burn more gas!) There are gas stations along your route where you can refuel when needed. Your score depends on your average speed.

COMMANDS

As in most adventure programs, you "talk" to the computer in one-word or two-word commands. For example, "GET GAS" or "FIX TIRE". In addition, in this program, you control the speed of your car by typing a number representing the speed you wish to travel. Your speed around turns or on curvy roads will depend on the sharpness of the turn. The sharper the turn, the lower the maximum safe speed. On straight stretches, you can go as fast as your car will allow, but you must decelerate before entering a turn. Failure to decelerate may result in your demise ! !

GUMBALL RALLY ADVENTURE will provide you with many hours of enjoyment.

Requires 32K.

Price: $21.95 Diskette
$24.45 Disk

## VALLEY OF THE KINGS

(Atari diskette only; 48K)

VALLEY OF THE KINGS is an exciting and challenging graphics adventure for the Atari. The adventurers must use their skills to locate objects and passages. There are keys, matches, locked gates, swords, coins, rings, magic daggers, dark passages, guarded temples, fierce princes, gruesome trolls, mountain bandits, and strange guard beasts. And these are just the ones you will meet in your first journey!!! VALLEY OF THE KINGS is a triple journey adventure.

Your first journey places you in the mountainous region of southern Egypt. Hidden in the mountains are treasure and danger. If you survive you will gain the riches and skills needed for your second journey. In the second journey you find yourself deep in the tunnels beneath the city of Armant. Many enter these tunnels but few discover the secret of the maze and the only passage out. That passage leads to the third and final journey, perhaps your very last. . .

The final journey sends you against the powers of the Kings. You must outmaneuver each one to gain access to the valley and your reward.

VALLEY OF THE KINGS fills an entire diskette and has been said to be "the best Atari graphics adventure available." It is available only through DYNACOMP and its dealers.

Price: $19.95 Diskette

## WIZARD

(Commodore 64 only)

WIZARD combines strategy, fantasy, and joystick action to create one of the most involving adventures available.

With joystick in hand, you explore forty individual screens, each new and exciting. Jump from ropes to ladders, dodge plummeting boulders, and duck arrows in your quest for gold, diamonds, and pearls. Take the key to unlock the doorway to the next level of adventure. Each key restores your magical powers, allowing you to cast spells.

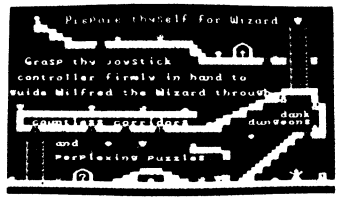
WIZARD is realistically animated in every possible direction. Dozens of movements are possible — jump over burning fires, shinny up or down ropes and ladders, even slip down treacherous sliding staircases! Magic portals move your Wizard through mid-air and protect you from a myriad of fully animated fiendish monsters. Catch an elevator to the top of the screen and dart through sliding gates in your quest for magic and treasure.

WIZARD's fascinating variety of screens is sure to please and entertain. You can also build an unlimited number of your own levels using the construction set provided with your game. This construction feature is very popular and allows you to further expand WIZARD.

Requires a joystick.

Price: $39.95 Diskette

Sample display:



## WINDMERE ESTATE ADVENTURE

(North Star and Apple only)

The WINDMERE ESTATE ADVENTURE is an exploration simulation. You start in the Rose Garden on the grounds of Windmere Estate. Using the computer and two-word sentences, you attempt to find all the treasures and deposit them safely at the treasure drop. There are a number of puzzles to solve (e.g. how to get to the Warehouse). There are some tricky areas where caution should be exercised or you will not survive. The key to winning the game is to successfully discover and enter all the hidden rooms (which abound).

The object of the game is to score all the points. Each item considered a 'treasure' has a number of points assigned to it, and the points will be credited to your score when that item is DROPPED at the Warehouse. When the last treasure is DROPPED at the treasure store, you will arrive at the last puzzle of the game. A successful solution to that problem gives you the final victory!

The computer will recognize many one- or two-word commands including quite a few verbs and nouns. Examples: HELP, QUIT, LOOK, NORTH, N, SE, and DOWN. This is not a complete list by any means. Some two-word commands are: GO SOUTH, POUR WATER, and TAKE ROPE. In some cases, where you are determines the validity of a command (CLIMB, ATTACH ROPE, etc.) At other times a command will be valid only if you have some special item in your posession (PRY GATE). There are also cases where some previous action must have been successful before a command is valid (e.g. TAKE RATS).

On occasion you will find an item that is obviously not a 'treasure'. An example of this is a lamp. This can be carried about and used to light dark areas (use LIGHT ON, or simply ON to start it. Use OFF to turn it off to conserve power.) There are many other useful items lying around for your use. You are allowed to carry only seven items at one time — unless you can set one inside something else!

Circumstances sometimes arise, particularly with an inexperienced player, that will cause the player to die. There are some bats flying all over the place, and these bats are deadly! There is one sure repellant available somewhere out there. Stumbling in the dark or stepping into dark holes are other ways of doing yourself in.

Requires 48K.

Price: $29.95 diskette

## GENESIS - THE ADVENTURE CREATOR

(Apple only)

Until now, if you wanted to write an adventure game, you needed lots of time and considerable programming skill. Such a task requires you not only to create a world – the fun part – but to write routines to keep track of everything taking place in it – the drudgery. Now however, there is GENESIS. GENESIS removes this drudgery from creating adventures. You design your world – GENESIS programs it.

GENESIS has two parts. The Creator allows you to create and edit your adventures. The Player allows you, or anyone else, to play any adventure you have created. After you get a feel for the system, you will probably be able to create a moderate sized game of about thirty-five locations in one to two hours – a great improvement over the weeks or months it would take were you doing the programming yourself in BASIC or another language.

A 60-page "how-to-do-it" manual is included.

NOTE: GENESIS was originally published by HEXCRAFT, and is now published by DYNACOMP. See review in *Softalk*. Requires disk drive, 48K RAM.

Price: $49.95 Diskette

## CRANSTON MANOR ADVENTURE

(North Star and CP/M only)

North Star and CP/M users finally have available a most intriguing adventure program. The CRANSTON MANOR ADVENTURE takes you into mysterious (and dangerous!) Cranston Manor where you attempt to collect its many treasures. Lurking in the Manor are wild animals and robots who will not give up the treasures without a fight! This challenging program will provide you with many hours (days?) of fascination. The adventure may be interrupted at will and your status saved onto the diskette. Any number of people may play; The CRANSTON MANOR diskette will store over 200 suspended games.

CRANSTON MANOR comes with a 6 page instruction booklet which outlines the means of play, but does not give away the solution!

The Apple version of CRANSTON MANOR (not distributed by DYNACOMP) is in the top 30 of SOFTALK's popularity list!

Price: $19.95 Diskette
$22.45 CP/M Disk

## STARSHIP LANDING PARTY ADVENTURE

(Apple, TRS-80, IBM, and Atari only)

While on patrol, your starship suddenly encountered a severe cosmic storm. The shields snapped on automatically, protecting the ship, but the tremendous energy drain as the shields fought the storm burned out all the ship's power crystals. Limping along on battery power, your starship managed to reach an abandoned solar system and attain an unstable orbit around an abandoned mining planet. The orbit is decaying and your starship will reach the atmosphere and burn up in 12 hours. There is just enough power left to beam down one person, armed only with a hand laser, and then beam that person back up again with a supply of power crystals.

Unfortunately, the planet was mined out and abandoned years ago. There is a legend, however, that one crazy old miner working an isolated mine in a valley surrounded by high cliffs made a rich strike many years ago and never sold the crystals. He died many years ago without ever telling anyone where he hid the crystals he had found. What's more, rumor has it that he was so afraid of thieves that he left a series of traps at his mining camp to keep anyone from getting the crystals.

Uses full-sentence input and features move take-back.

Your job is to get those crystals! Requires 32K for TRS-80 and 48K for Atari.

Price: $15.95 Cassette
$19.95 Diskette

## THE ORIGINAL ADVENTURE
(CP/M only)

This is an updated version of the classic adventure game which first appeared on the DEC computer. It is still one of the *largest* adventures available, and is still fun to play. Because DYNACOMP has spent little time in developing this package, we can offer it to you at a *very* low price. Requires 48K.

Price: $ 9.95 Diskette
$12.45 Disk

Requires 48K, 8080 or Z80 microprocessor (will not run on the IBM).

## ZODIAC CASTLE ADVENTURE
(North Star and Apple only)

The ZODIAC CASTLE ADVENTURE has much the same program layout as the WINDMERE CASTLE ADVENTURE. This time you start in a glen near the castle and must find and accumulate treasures. The play is the same, but the treasures and circumstances are different.

Requires 48K.

Price: $29.95 diskette

## BEGINNERS' ADVENTURES
(TRS-80 only)

This is a collection of mini-adventures designed for first-time adventure players. Each adventure has a specific goal, is challenging, but is not so difficult as to be frustrating. You are supplied a list of verbs and nouns used in the commands (this makes life a lot easier!), but it is up to you to work your way from there. These games are also priced low (sorry, no inclusion in quantity discounts), giving you an inexpensive introduction to adventuring.

MONASTERY OF GWYDION

Price: $ 9.95 Cassette
$13.95 Diskette

MEDUSA'S REVENGE

Price: $ 9.95 Cassette
$13.95 Diskette

KING REX III's TOMB

Price: $ 9.95 Cassette
$13.95 Diskette

MISSILE SUBMARINE WARFARE

Price: $ 9.95 Cassette
$13.95 Diskette

PITS OF HEMLOCK

Price: $ 9.95 Cassette
$13.95 Diskette

## MIGHT & MAGIC
(Apple only)

MIGHT & MAGIC is a fantasy role-playing game for your Apple computer. Players create a personal character and journey into an adventure in hopes of becoming richer and more powerful while trying to complete their quest.

MIGHT & MAGIC adventures take place on the continent of Wingster. Wingster is a land where the forces of evil and good constantly battle for power and wealth. It is a world of powerful wizards, great warriors, and cunning thieves. Wingster is inhabited by Dwarves, Elves, Hobbits, and Man. It is also a land of countless monsters and beasts created by the "Dark Side".

There are many special features of MIGHT & MAGIC. The game allows players to create and store their characters on the MIGHT & MAGIC side of the disk. Because countless traps and monsters are encountered during the adventure, MIGHT & MAGIC incorporates a unique combat system featuring round-by-round combat. During each round the player may select the character's weapon and tactic for that round of combat. Players may also save their game at any time during the adventure. The character's data, special abilities, and equipment may be obtained at any time showing the player everything about the character. Throughout the adventure there is a two-line status display giving the location, hunger, need for sleep, power points, time, and physical condition of the character. There is also a complete rule book on the disk for easy reference.

The dungeon adventure on the back side of the MIGHT & MAGIC disk is THE LAVA PITS OF AZNAR. In this adventure the players pit their strength and wit against the awesome forces which dwell in the volcanic dungeon during their quest for the amulet of the "High Lord of Aznar".

A must for the Dungeons and Dragons™ fan.

Requires 48K and one disk drive.

Price: $39.95 Diskette

## CYBERWORLD
(Commodore 64 only)

This five-screen arcade adventure is packed with great graphics and sound.

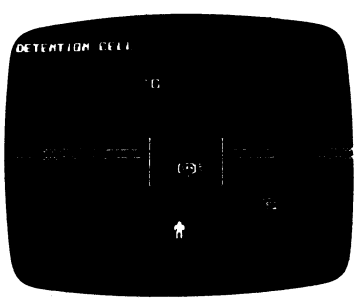
You are a Cyber league special agent in a universe full of hostile aliens and vicious robots. You travel through 30 rooms, encounter space barriers, fight fleets of invaders, and come on warship-ridden quadrants in space.

CYBERWORLD uses over 100 sprites, 8 new character sets, and dozens of sound effects in creating this multi-layered adventure. In fact, the animation, action, and strategy are so extensive that two full disk sides are filled with programs and data.

Requires a joystick.

Price: $39.95 Diskette

Sample display:



## CASINO
(TRS-80 only)

CASINO is the card game that was in vogue prior to the advent of Gin Rummy. It is still very popular and is often taught by grand parents to their grand children.

The DYNACOMP version uses two players: you and the computer. The computer plays a fairly strong game and (of course) keeps track of scores, shuffles, deals, etc. The cards are shown on the screen using TRS-80 graphics. All the features of standard casino are included.

CASINO comes with a complete instruction manual which includes a section on the rules of the game, as well as playing strategy. If you want to learn to play Casino or are looking for a worthy opponent, here is your chance. Requires 16K-(cassette), 32K (diskette).

Price: $12.95 Cassette
$16.95 Diskette

## BRIDGE SCORER
(CP/M MBASIC only)

The duplicate bridge player is often faced with the choice of either going home and wondering who won, or staying and waiting (working) through the scoring and looking for reasons why the scores did not balance. Now you can use BRIDGE SCORER instead.

BRIDGE SCORER was designed to provide rapid and easy scoring for the session. It automatically summarizes each board after all plays are entered, and tallies the overall results after the last board's results are available. The results are shown on the screen, saved on disk, and (optionally) printed.

You may define the players' names, type of movement (e.g., Mitchell), number of tables, number of boards to be played, and sit out round (if necessary).

The board scores include board number, NS/EW number, the bid and declarer, doubling/redoubling, and results. The program will calculate the scores and tally the results.

Be the hit of the party by bringing BRIDGE SCORER!

Price: $29.95 Diskette

Requires MBASIC release 5.2 (BASIC-80) or higher (version supplied with Kaypro, Osborne, IBM, Morrow, etc.).

## DOUBLE-DECK PINOCHLE
(TRS-80 only)

DOUBLE-DECK PINOCHLE is simply the fastest (machine language) and best-playing computer pinochle program available. You may either play in the learning mode or compete in a regular game. There are four players, with the computer supplying your partner and the opposing team. The game includes bidding, playing, scoring, and a HELP mode. If you like to "meld", you will love DOUBLE-DECK PINOCHLE.

Price: $19.95 Cassette
$23.95 Diskette

## CRIBBAGE 2.0
(TRS-80 only)

CRIBBAGE 2.0 is a two-handed version of the classic card game, Cribbage. The standard rules of play and scoring are followed, and the points are announced using the traditional phrases. The score is visually shown on a standard 60-hole cribbage board which requires two "trips" to win.

The computer is a worthy opponent in CRIBBAGE 2.0. The program features excellent graphics and assembly language sub-routines for fast response in determining crib cards and meld points. The ownership of the crib is considered to get a good crib determination, and you may ask the computer for help with your crib cards.

This is an excellent program for the cribbage player in search of a tough opponent as well as the beginner wishing to learn the game and its scoring intricacies.

Requires 16K, Model I only. See review in 80 Software Critique.

Price: $19.95 Cassette
$23.95 Diskette

## BRIDGE MASTER
(available for all computers)

If you liked DYNACOMP'S BRIDGE 2.0, you will absolutely love BRIDGE MASTER. BRIDGE MASTER is a comprehensive bridge program designed to provide hours of challenging competition. Bidding features include the Blackwood convention, Stayman convention, pre-emptive openings, and recognition of demand bids and jump-shift responses.

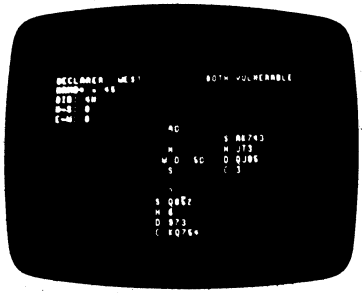
The program plays the North hand as your partner and East-West as your opponents. After playing a specific hand, you may replay the same hand, with the option of switching cards with your computer opponents. This feature allows you to compare your bidding and playing skills to BRIDGE MASTER.

A unique feature of BRIDGE MASTER is its scorekeeping capability. Points scored for each hand are calculated. Bonuses for game contracts and slams are awarded as in duplicate bridge. Doubled contracts are scored based upon a computer assigned vulnerability. Individual hand scores are tabulated and an accumulative score card is displayed at the conclusion of each hand played. The score card displays a summary of total hands played, total points scored, number of contracts made and set, and % bids made.

Requires 24K program memory (Atari version requires 48K). Available on disk only.

Price: $29.95 Diskette
$32.45 8" CP/M Disk

Sample display (North Star):



See the review section for more information.

## POKER PARTY
(available for all computers)

If you enjoy draw poker, then this is the software package for you.

POKER PARTY is better classified as a simulation than a game. As a simulation, POKER PARTY is an excellent (and inexpensive) tool for learning the subtleties of draw poker. As a game, it is simply fascinating!

POKER PARTY differs from most microcomputer poker games in the following two important ways. First, the level of play engaged by the computer opponents on the whole is quite high. Second, it is not just a two-handed game (how often do people play two-handed draw poker in real life?), but rather seven-handed. The usual rules of draw poker are followed, including a maximum of three rounds of betting before the draw (up to five cards), and at most three after. Aces may be used either high or low in straights, and there is a wild card.

The six computer players each have a different "personality" ranging from conservative to risk-taking. You can get to know your opponents with time, but it will require careful observation of the betting patterns. Your seating position changes from game to game. Sometimes you will follow a bluffer, other times he (she) will follow you.

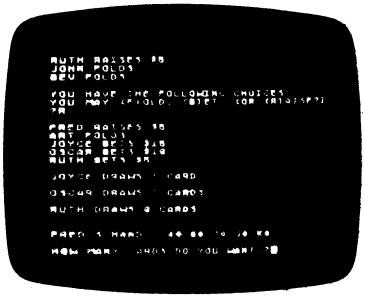
Spend an evening with POKER PARTY for enjoyment, or practice for that next money game!

The POKER PARTY package also includes a 6 page manual describing how to play as well as providing information on strategies.

Requires 16K of program memory (Atari requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample display (Atari):



●See the REVIEWS section!

## HEARTS 2.0
(Atari only)

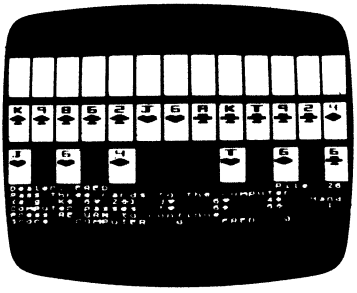
HEARTS 2.0 is a very nice two-handed version of the classic game of hearts. You and your opponent (the computer) are each dealt 13 cards. As cards are played, more cards are dealt to maintain the 13-card hands, until the entire deck is dealt. Then you play out the remainder.

HEARTS 2.0 includes three-card passing, shooting the moon (if desired), sound (exerpts from Wagner, Chopin, Shubert, Beethoven, Handel and Tchaikovsky) and pleasing graphics. Most important however, the computer is a *good* player and responds quickly. Also, the game is easy to learn (the manual describes the rules and strategy) and play. Recommended for ages 9 and up.

Requires 48K and one disk drive.

Price: $19.95 Diskette

Sample display:



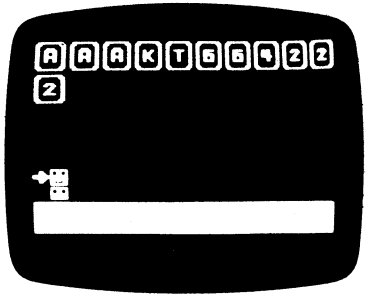
## GO FISH
(Available for all computers)

GO FISH is the classic childrens card game, adapted for one player against the computer. The Atari and Apple versions use graphics which make the game suitable for play with small children. The CBM and Northstar versions will require more assistance from an adult because the presentation of the game is done with text. The game strategy is simple, yet provides an easy way to introduce children to the concepts of chance and analysis, as well as being an enjoyable and challenging game. It is also a pleasant way of introducing a child to the computer.

Requires 16K program memory space (Atari version requires 24K). Not available on Apple cassette.

Price: $14.95 Cassette
$18.95 Diskette
$21.45 8" CP/M Disk

Sample display (Atari):



## BLACKJACK COACH

(Available for all computers – except Atari and NEC NBASIC)

Learn and practice your blackjack skills with the "Coach" giving advice and consent. Test various playing and betting strategies. The automatic play mode uses either the basic count or the complete card counting method together with one of three betting methods. All playing options are included. Up to 6 decks per shoe. Learn to count cards to change bets and decisions. Numerous summary data displays plus up to 8 reports will reveal precisely which parts of your strategy work and which do not. Use of a printer is optional. Develop your own strategy modifications. "Practice on Screen Before Green $".

BLACKJACK COACH includes a 30 page tutorial manual which is a value in itself.

Requires 32K. Disk version requires 48K.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 8" CP/M Disk

See the review section for more information.

## M-MASTER

(available for all computers)

The first computer version of the card game that is favored by members of Mensa, the "high IQ club", is now offered exclusively by DYNACOMP.

While easy to learn, just as chess is easy to learn, the High IQ game demands a different approach and strategy with each new hand. In many ways, the appeal of this game is the same as the appeal that high-stakes gamblers find in Old Maid, though the games are not related in any way. There are two levels of play. At the computer's best strategy level, it may be truly unbeatable; at the normal level of play, the human has a fighting chance if he is sharp enough and willing to take chances.

To our knowledge, this is the first time that the High IQ favorite has been offered as a computer game, and joins the broad DYNACOMP library of leading software.

Price: $15.95 Cassette
$19.95 Diskette
$22.45 8" CP/M Disk

## MYCHESS™

(IBM and H/Z-100 only)

Now you have the opportunity to own a true world-class micro chess program. MYCHESS, best micro in the 1979 ACM North American Computer Chess Championship, and winner at the 1980 West Coast Computer Faire over such opponents as Sargon 2.5 and Atari, is now available for *your* computer. Nine skill levels tailor MYCHESS to any opponent. The program plays varying openings from a "book" of over 850 moves, saves a game in progress for later resumption, and prints game listing during or after the game. MYCHESS features color and monochrome graphics displays on IBM PC, PCjr, and Z-100.

Recommended for PCjr with TV adapter.

Requires 96K.

Price: $34.95 Diskette

Written by Software Toolworks



## SPACE LANES

(available for all computers)

SPACE LANES is a simple, but exciting, simulation of the economics of the space transportation industry. The object is to establish and expand space transportation companies in a competitive environment. The success of a particular company is measured by the extent of its space lanes. This success is reflected in the value of its stock. The player participates in this industry by helping in the formation of companies and the extension of the space lanes, and the financial rewards accrue from wise choices in the purchasing of stock.

Hal, the computer, is one of the players. Up to three additional players are allowed. The simulation consists of 50 playing rounds, after which the net worth of each player is evaluated to determine the winner.

The galaxy is displayed on a 9 by 18 grid. This map shows star bases, space lanes, and remote space stations. Up to five companies may be in operation at one time.

Requires 16K (Atari version requires 24K).

Price: $10.95 Cassette
$14.95 Diskette
$17.45 8" CP/M Disk

Sample display (Atari):

## MASTERMATCH

(Atari only)

MASTERMATCH is an exercise in logical thought and concentration. The object of the game is to correctly match a pattern of colors by making logical choices based on clues provided by the computer. MASTERMATCH is joystick controlled and may be played on seven difficulty levels to challenge players of all ages and abilities. The game may be played by one person against the computer, or two people may play — one selecting the hidden color pattern with the other attempting to match it. You even have the option of designing your own gameboard layout in any one of more than 2,800 variations.

MASTERMATCH is also available through the Atari APX at $24.95.

Requires 32k and one joystic.

Price: $14.95 Cassette
$15.95 Diskette

## DOMINO
(IBM and Apple only)

The origin of DOMINOES dates back before 1,000 BC. The rules are simple and the game is fun to play. It is an easy game for children but difficult for champions.

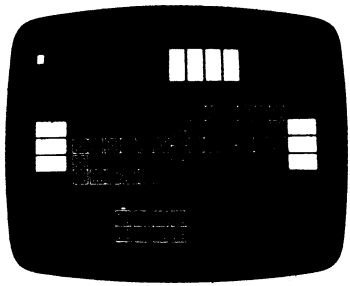
The traditional game of DOMINOES is usually played with four people forming two teams. In the computer version, the computer takes the place of your partner and the opponents. Three levels of play are available (novice through expert).

DYNACOMP's DOMINO package includes a 28-page manual which describes the game and strategies, and which provides graphic illustrations of how the computer version is played. The program itself uses graphics to simulate the playing table.

If you want to learn how to play real dominoes, or if you want to practice the game, DOMINO is for you.

Price: $29.95 Diskette

Sample display (Apple):



## BACKGAMMON 2.0
(available for all computers)

This program (by Giga, Chicago, IL) tests your backgammon skills and will also improve your game. A human can compete against the computer or against another human. The computer can even play itself! Either the computer or human can double or generate dice rolls. Board positions can be created or saved for replay. BACKGAMMON 2.0 is played in accordance with the official rules of backgammon, and is sure to provide many fascinating sessions of backgammon play.

Requires 16K of program memory (Atari requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample Atari display:

Color information did not photograph!

## CHESS MASTER
(North Star, CP/M, and TRS-80 only)

CHESS MASTER is a computer program which will challenge your chess playing ability with its aggressive style of play. Written in assembly language (by SOFTWARE SPECIALISTS of Norco, California), this program employs the full graphics capability of the TRS-80 and also provides the North Star user (either Z80 or 8080 microprocessor) with two different board sizes to select from.

You may choose between five different playing skills for your computer opponent, ranging from beginner (but a tough opponent when playing "lightning" chess!) to expert. Besides providing for King or Queen-side castling, en passant captures and pawn promotion, CHESS MASTER also allows you to preset the board in any configuration which you may find of interest. This allows for the examination of book situations or the replaying of interesting positions occurring during previous games.

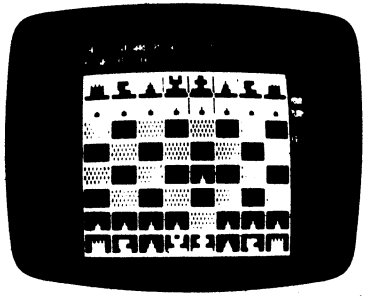
Moves are conveniently made by entering the number of the square you are moving from and the number of the square which you are moving to. The program checks all moves for legality and then displays the moves in standard chess notation.

Requires 16K. TRS-80 version available only for Model I. Not available for IBM PC.

See review in On Computing.

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample display (TRS-80):



## FOUR TOES
(Apple only)

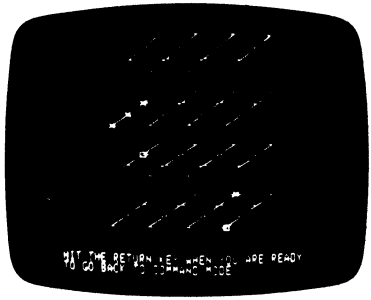
FOUR TOES is a game played by two people on a three dimensional 4 x 4 x 4 game board. The two players can be both human, or a human against the computer. The object of the game is to get four makers in one of the seventy-six possible rows.

Each player has the choice of three strategic maneuvers. The first, and easiest, is to create two markers. The second is to remove an opponent's marker and to create one of your own. The third choice is to establish a permanent destruction zone in which no other marker can survive once it has been activated.

Although the rules are simple, the play is complicated and very challenging, particularly because of the three dimensions.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



## COMPU-OPOLY
(TRS-80 only)

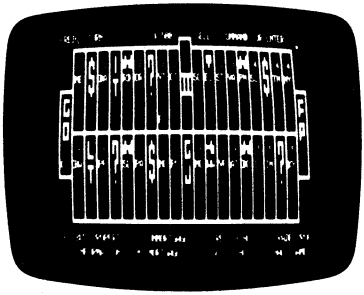
Hone your skill in the world of finance with this simulation of the popular Parker Brothers board game MONOPOLY™. Are you a good enough trader to drive from one to seven oponents to financial ruin? Your investments will have to be wise ones if your adversaries are computer players, because there is only one skill level — ruthless!

In addition to serving as any or all of your opponents, COMPU-OPOLY acts as both banker and games keeper. There's no need to set up a board. The computer displays everything on the screen, from the rolling of the dice to the construction of houses and hotels. Since all transactions are handled electronically, the blows are fast and furious. A typical computerized game will take only about two-thirds as long as its dining-room table counterpart.

You won't want to be caught without COMPU-OPOLY when game fanatics come to visit. Plays against itself, too. Requires only 16K (cassette) or 32K (diskette)

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



See the review section for more information.

## HINT
(Apple cassettes)

Apple cassettes load easier if you start the load just after the "blip" at the beginning of the tone. A volume level near 2 (out of 10) with the "tone" all the way up is a good place to start trying to find the best playback level.

## CHECKERS 3.0
(PET/CBM only)

CHECKERS 3.0 is a challenging machine language program for playing checkers against your PET/CBM. Ten look-ahead levels of play are provided for the computer's response. The associated response times are:

| LEVEL | TIME |
|---|---|
| 0 | 5 seconds |
| 1 | 45 seconds |
| 2 | 5½ minutes |
| 3 | 40 minutes |
| 4 | 2 hrs. 30 min. |
| 10 | ?? |

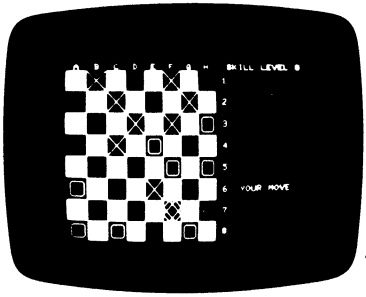
At level 2 you are facing a very formidable opponent!

CHECKERS 3.0 supports all the standard checkers rules, including kings and forced moves. This is an excellent game for both the child and the adult.

Requires 16K. Does not run on Commodore 64.

Price: $16.95 Cassette
$20.95 Diskette

Sample display:



## COACH'S CORNER
(Apple only)

COACH'S CORNER is a realistic computer football game which allows you to coach rather than play. It is your team against the computer's. There are ten degrees of play so that you may always find a competitive level.

Here is a partial list of the types of plays at your disposal:

*Offensive Running Plays:* Regular run, strong sweep, weak side run, quick draw, delayed draw, reverses.

*Offensive Passing Plays:* Screen passes, delayed strong screen, slants, down-and-in, bombs.

*Offensive Kicking Plays:* Punt, field goal attempt, quick kick, regular kick off, onside.

*Defensive Plays:* Deep, normal, dog inside, dog outside, blitz, punt blocking, tight defense, emphasized normal.

The computer calculates the outcome, keeps track of the score, field position, time remaining, downs, etc.

The outcomes of particular plays are based on the percentages of success generally observed in football games under the given conditions. You can play consevatively, or use any mixture.

COACH'S CORNER is a very educational game in that it teaches football strategy by "first-hand" experience. Playing COACH'S CORNER will help you better understand what is happening on the real field.

Requires 48K and one disk drive.

Price: $29.95 Diskette

## TRIVIA MANIA™
(North Star, CP/M, IBM
Commodore 64, and Board Game)

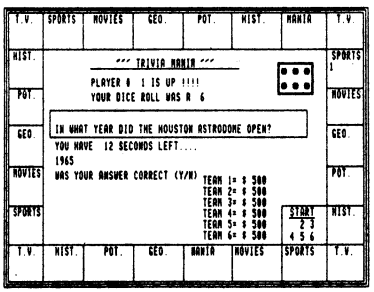
The fun of trivia questions goes computer! TRIVIA MANIA™ has six test categories, each containing eight-hundred questions. TRIVIA MANIA™ will test your strategic skill as well as your fund of knowledge. Choose from four levels of timed play. Up to six players or teams may play at one time. Score is kept in dollars. Whether you are a trivia maniac or just a beginner, you will enjoy both the questions and play.

TRIVIA MANIA™ is also available as a board game not requiring a computer.

Commodore version requires 2 disk drives; all others require only one disk drive.

Price: $39.95 Diskette
$39.95 Board Game

Board Display:




## STAR CON
(North Star, CP/M, and IBM only)

STAR CON is a computer board game in which the objective is to conquer all 20 planets which exist on a 20 x 20 star map. The planets resist you by using their resources to build more effective defenses with time. You, in turn, can construct factories on captured planets to enhance your aggressive capability. You can move people and supplies, send out scouts, etc. Games can be saved and reloaded. The star map can be varied to create different scenarios. All of this leads to many hours of thoughtful entertainment. Requires 48K.

Price: $19.95 Diskette
$22.45 8" CP/M Disk

## CASINO CRAPS
(Atari only)

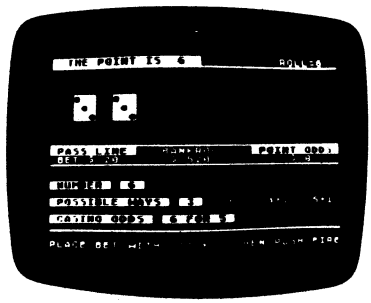
Whether you are a seasoned "crap shooter", wish to learn the game of craps as played in the casinos, or just want to have fun rolling the dice, CASINO CRAPS will surely interest you. CASINO CRAPS will teach you:

How to play the game of "craps"
How to take advantage of the odds
How many ways a number or point can be made
What odds casinos offer on the various numbers
The pay-offs for different odds
The possible bet losses
The winning combinations
The various "craps" combinations
And more . . .

Requires 16K (Cassette), 24K (Diskette).

Price: $19.95 Cassette
$23.95 Diskette

Sample display:




## LAS VEGAS KENO
(Atari only)

KENO is the oldest game of chance known. It is played with a cage containing 80 numbered balls. A dealer draws 20, and the wagerer (before the draw) bets on which numbers will be drawn.

In LAS VEGAS KENO, the computer plays the part of the dealer and calculates the payoffs (using tables within the program). This takes much of the drudgery out of playing and speeds up the play. The program is nicely done and interesting to play. LAS VEGAS KENO requires 48K and one disk drive.

Price: $12.95 Diskette

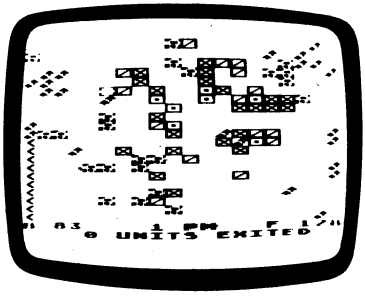
## LEIPZIG 1813
(Atari only)

LEIPZIG 1813 is a one-player simulation of the first day of the Battle of Leipzig in Austria during 1813.

Using a joystick, the player directs movement and artillery bombardments of the combined army of the Allied nations against the computer controlled French army. LEIPZIG 1813 is a corps-level strategy game using standard military symbols to depict the Infantry, Cavalry, and Artillery units involved in the struggle. Leipzig's attack option, seven (7) levels of difficulty and three (3) levels of victory can provide the novice wargamer with an exciting game or an experienced Field Marshall with a tough, challenging battle. LEIPZIG 1813 makes wargaming easy. The computer calculates odds, combat results, and Zones of Control, as well as commanding the French army against you. This simulation requires strategy and tactical maneuvering. Average playing time is approximately 1 hour per battle. Runs in 32K (cassette), 48K (diskette). One joystick required.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



## WATERLOO 1815
(Atari only)

WATERLOO 1815 is a one-player simulation of the Battle of Waterloo. Using a joystick, you command Napoleon's Grand Armee' against the British and Prussian forces. You are even able to direct artillery bombardments against enemy units within the range of your guns.

WATERLOO 1815 uses standard military symbols to depict your infantry, cavalry, and artillery divisions. You have 19 game turns to either decisively defeat the Allied forces or to exit as many units as possible. Ten levels of difficulty are provided, ranging from a doubled French combat strength to additional Allied combat strength. There are also three levels of victory. Additionally, the player has the option of disposing with the Prussian army before the game begins.

WATERLOO 1815 takes the drudgery out of wargaming. The computer calculates combat odds, combat results, and zones of control, as well as commanding the British/Prussian forces against you. This simulation requires strategy and tactical maneuvering. Average playing time is one hour per battle.

Cassette version requires 32K; diskette version requires 48K. One joystick required.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:

## SHILOH 1862
(Atari only)

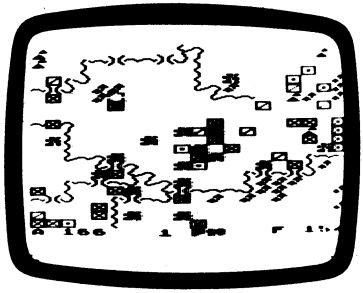
SHILOH 1862 is a brigade level one-player simulation of the first day of the Battle of Shiloh during the American Civil War. Using a joystick, the player directs movement and artillery bombardments of the Union Army against the computer controlled Confederate Army. The Union player is faced with the same problems General Grant had from the strong surprise attack by the Rebels and mass desertions from his ranks.

The player wins by preventing the Rebel Army from occupying Pittsburg Landing. SHILOH 1862 uses standard military symbols. It allows the player to design his/her own level of difficulty. The computer calculates combat odds and results, Zones of Control, as well as commanding the Rebel forces against you. This simulation requires strategy, tactical maneuvering, and luck. The average playing time is approximately 1.5 hours per battle.

Cassette version requires 32K; diskette version 48K. One joystick needed.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



## THE DYNACOMP BATTLE TRILOGY

Are you a wargamer? Do you like Atari's EASTERN FRONT? If so, you will be delighted with each game in DYNACOMP's battle trilogy: WATERLOO 1815, LEIPZIG 1813 and SHILOH 1862. Each of these simulations uses standard military symbols and pits you against a tough computer opponent. Each program, after compacting and optimizing the code, is *twice* as large as the very popular EASTERN FRONT. In short, both from a graphics and strategy viewpoint, these games are *excellent*.

Since many will want the complete set, we offer the following package price:

BATTLE TRILOGY: Three cassettes: $79.95
Three diskettes: $89.95

## BATTLEFIELD!!!

(available for all computers except North Star DOS/BASIC)

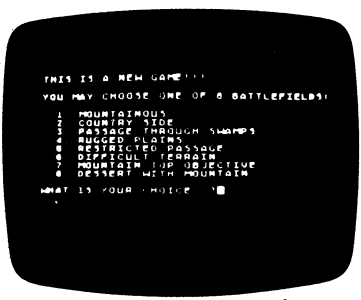
BATTLEFIELD!!! is actually eight games in one. It is based on the eight disk war games set originally distributed by Xitron Systems for the North Star computer. A year ago DYNACOMP acquired the publishing rights for this software and for all conversions to other computers. During the process of translation we found that the essential features of all eight games could be combined into one group of programs which would fit on a single disk. We named this combination program BATTLEFIELD!!!

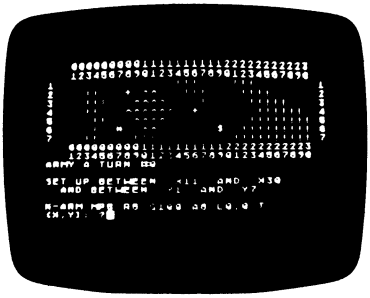
BATTLEFIELD!!! is a tactical simulation of war. You may choose one of eight battle terrains on which to play. The combatants have armies composed of both infantry and armor. The aggressor has thirteen armies, the defender, ten. The terrains include mountains, swamps, plains, slopes, rough ground and woods. The game is played by turns. During each turn a given side can move and shoot with each army. Then the opportunity switches to the other side. A particular game can end one of three ways: Time has run out; the aggressor has gained a chosen number of victory points (by damaging/destroying armies); the target has been reached.

Although BATTLEFIELD!!! is best played with two people, our programmer found that it was also very interesting to play against yourself. For those interested in a game of strategy combined with excitement, this is a good choice. Requires 48K.

Price: $23.95 Diskette
$26.45 Disk

Sample displays:



## THREAT FORCE

(Atari only)

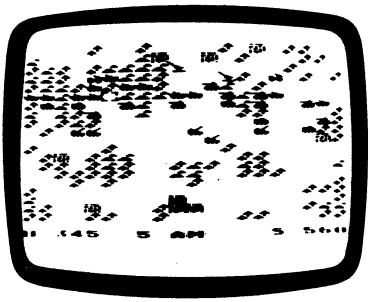
THREAT FORCE is a battalion-level, one-player simulation of a hypothetical battle between U.S. Army forces in Europe and invading Soviet/Warsaw Pact forces. The player controls the American units and may choose to defend with either a mechanized infantry division or an armor division. The THREAT FORCE, controlled by the computer, is composed of a motorized rifle division and a Soviet tank division. The player uses a joystick to direct the movement and artillery bombardments of friendly units and to check the attack and defense strengths of enemy units. To win, the American forces must prevent the Soviets from capturing the city of Kreigsden. THREAT FORCE uses the Atari's special capabilities to show tanks, armor, etc. You design your own level of play difficulty by modifying the combat strength of each unit.

Wargamers and non-wargamers alike will enjoy THREAT FORCE. You need not know anything about wargaming to play this game. The computer will make all of the necessary calculations and execute all movement and combat actions; you simply give the orders. THREAT FORCE requires strategy, tactics, and luck. Average playing time is one hour per battle.

Requires one joystick, 32K (cassette), 48K (diskette).

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



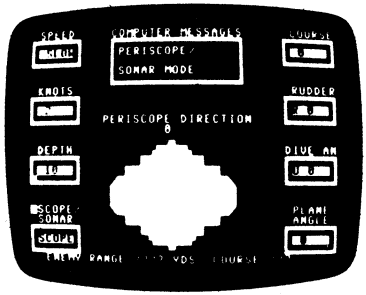
## SUBMARINE COMMANDER
(PET only)

SUBMARINE COMMANDER is a "real time" submarine simulation. The author has had hundreds of hours of experience at the helm of a submarine and has brought this experience together to make this a highly realistic and challenging simulation.

All major submarine movement characteristics and attack limitations have been faithfully incorporated into the program and the enemy ship's course and speed are randomly selected. Because this is a real-time program, care must be taken when firing a torpedo; that is, "leading" must be taken into account as the ship will continue to move after the torpedo has been fired. The visual display is exceptionally good.

Price: $15.95 cassette
$19.95 diskette

Sample display:



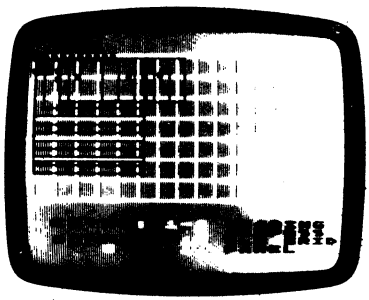

## SUPER SUB CHASE
(Apple and Atari only)

SUPER SUB CHASE is a game for one or two players. Take over the controls of a destroyer in search of a submerged enemy submarine. The only clues you will receive are from your sonar, and you will need a good memory and powers of deduction to find the sub in your territory. This is a high resolution graphics simulation which makes good use of the Atari special character sets, sounds, and mixed graphics features to produce an interesting and challenging game for all ages. All commands are entered through the joystick ports, which makes playing the game a pleasure. Several options are available to make the game very interesting and challenging. All in all, this is a fun game which shows off some of the powerful graphics power of the Atari.

Requires 24K.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



## IRONCLADS
(48K CP/M systems only; e.g., Osborne, SuperBrain, NEC, North Star)

IRONCLADS is a simulation of naval strategy and tactics between steam and wind driven warships of the 1860's through 1890's. Although originally designed for two players, single play against yourself is possible.

The simulation is very complete and realistic. Each side consists of a flotilla of ships. Each ship is characterized by its speed capability, seaworthiness (e.g., damage level) and fire power. The gunnery is very nicely modelled in terms of there being four batteries (forward, aft, port, starboard) on each ship, with each battery capable of firing different weight shells and having limited fire arcs. Ships can be trapped against the coast line or caught in port. You can even attempt to ram if all else fails.

With IRONCLADS you will gain an appreciation of the strategy and tactics involved in engaging in sea battle.

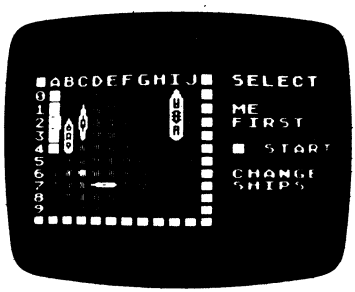
Price: $29.95 Diskette
$32.45 Disk

Not available for the IBM PC.

## SEA WAR
(Atari only)

Quite often the best basis for a new computer program is a classic board game. The concept for SEA WAR came from "battleship". We have added graphics, sound and a formidable (but honest) computer. This is a good game for the 5-12 year old group, and many adults also find it interesting. Requires 48K.

Price: $12.95 Cassette
$16.95 Diskette



## MANAGEMENT SIMULATOR
(available for all computers)

This program is both an excellent teaching tool, as well as a stimulating intellectual game. The MANAGEMENT SIMULATOR (by Giga, Chicago, Illinois) is based on similar games played at graduate business schools by teams of managers. The game realistically models the economic marketplace of the business world.

Each player, or team of players, controls a company which manufactures three products. The company competes against other companies, each of which sells three similar products. Each player attempts to out-perform his competitors by selecting what he perceives to be an optimum operating strategy. This strategy includes setting the following: selling price, per unit manufacturing costs, production volumes, marketing and design expenditures, plant and securities investments, as well as stockholder's dividends. The most successful firm is the one with the highest stock price when the simulation ends. The computer can also compete as a "pacesetting company". This feature is most useful when playing alone.

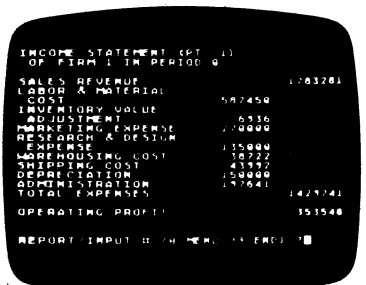
The MANAGEMENT SIMULATOR can either be played on-line or off-line and data from unfinished games can be saved on disk for continued play at another time. Each player will be able to study an income statement, a chas-flow report, a balance sheet, a plant report, various product reports, past-and projected-business indexes, or a competition report. It is from this information that the player ccan make suitable business decisions.

MANAGEMENT SIMULATOR comes with a 9-page instruction manual which includes a sample playing form.

Requires 16K. (Atari version requires 24K, TRS-80 version requires 32K.)

Price: $25.95 Cassette
$29.95 Diskette
$32.45 8" CP/M Disk

Sample display (Atari):




## SPECULATION
(TRS-80 only)

DYNACOMP's MANAGEMENT SIMULATOR has proven to be so popular that we decided to add a stock market simulation to our product line. Here is the market you will encounter:

There are thirty three companies grouped within eleven major industries. The companies encompass three risk ranges: growth, investment and speculative. Each player (two to four players) starts with $15,000 in capital. Companies can merge, go bankrupt, or be taken over (by a player obtaining majority control). Rumors are given regarding splits, price changes and merges. There are annual reports, tax audits, etc.

SPECULATION has much the same fascination as the time honored board game MONOPOLY™. SPECULATION is more complicated, but the computer handles the accounting chores. Requires 16K.

Price: $19.95 Cassette
$23.95 Diskette



## FLIGHT SIMULATOR
(available for all computers)

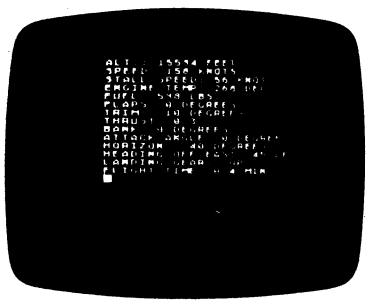
Learn from this realistic, mathematical simulation which allows you to take-off, fly, navigate, and land an airplane. The program employs kinematic aerodynamic equations, as well as applies the characteristics of a real airfoil to simulate the response of flying machines ranging from gliders to space shuttles. Unlike most arcade-like animations, FLIGHT SIMULATOR realistically portrays the problems associated with stalls, landing with the nose wheel first, cross winds, etc. You can practice touch and go landings, take a cross-country trip, or just practice exercising the flight controls; flaps, trim, elevators, bank, and throttle. A program for the thinker!

FLIGHT SIMULATOR is supplied with an extensive 27 page manual which fully describes using the program. The manual also contains detailed explanations of many of the technical aspects of the simulation.

See review in Computronics. All versions (including Atari) will run in 16K.

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample display (North Star):



## YACHT RACE
(Atari only)

YACHT RACE is a tactical game of navigation, sailing knowledge, and boat-handling skills. Using paddles (no pun intended) or joysticks, two yachts are sailed around a triangular course in a race to the finish. To achieve maximum speed, the skippers use controllers to steer the yachts and to trim sails according to the direction and speed of the wind. Hazards include rocks, course marks, a ferry, the beach, and collision with your opponent's yacht. Five courses and four degrees of difficulty may be selected. Compete against your own best time or against another player for a selected course.

Requires 48K, two joysticks or paddles.

Price: $19.95 Diskette

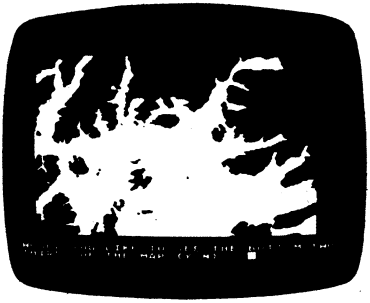
## VALDEZ

(available for all computers)

VALDEZ is a simulation of supertanker navigation in the Prince William Sound area of Alaska. It contains a detailed analysis of ship response characteristics, as well as a model of tidal patterns in the Sound. Navigation is aided by a variable range radar display with shows the land masses and other traffic (ships and icebergs). A unique feature of this simulation is the 256 x 256 element map employed. Sections of this map are peeked at using the radar display. This map feature is unique and greatly enhances the realism of the program. VALDEZ provides an interesting and educational exercise in ship navigation.

The VALDEZ package includes a 12 page manual which fully describes program operation. Requires 16K of program memory (Atari requires 24K). See reviews in 80 Software Critique, Creative Computing and Personal Computing.

Price: $19.95 Cassette
$23.95 Diskette
Sample display map (Atari): $26.45 8" CP/M Disk



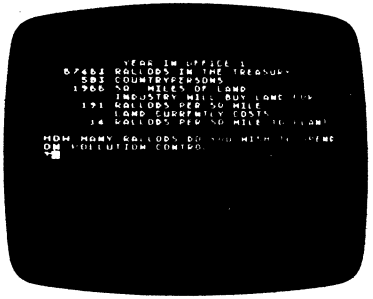
## MONARCH

(available for all computers)

MONARCH is a brain teaser! You have just been elected the Ultimate Ruler of your own country. It is your job to decide the country's budget. Your country's income comes from farm produce and tourism. Half your land is farmland while also having excellent mineral content. It is up to you to decide how to manage the country's economy and to redistribute the wealth to your countrymen. Can you keep your countrymen happy enough to last in office for eight years?

Requires 16K for all versions.

Price: $14.95 Cassette
$18.95 Diskette
Sample display:



## STARBASE 3.2

(available for all computers)

STARBASE 3.2 is a new and exciting program related to the classic space simulation many have played on "large" computers. This version is a significantly enhanced program, is more complex, and is more challenging. It was written by a visiting Croylin who decided to give his side a chance. The Empire gets even!

The Croylins have learned from their past experiences. Their task force is now composed of both light (the old style) and heavy cruisers. Some of the heavy cruisers have a proton torpedo deflection device and must be attacked from their weak side or with lasers. The croylins no longer wait to be fired on, but may initiate a battle. They also attack starbases in distant quadrants without warning and have enough fire power to eventually capture those bases unless the Invincible goes to the rescue.

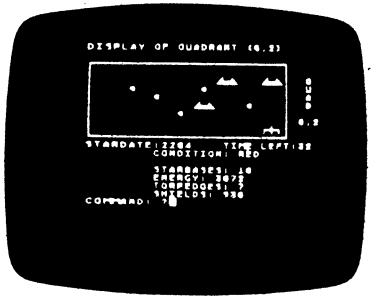
The Croylins now fight battles with a much better strategy. For example, they move. Sometimes they will move behind stars and hide. Other times they close in for a close-range laser attack. Croylin heavy cruisers sometimes start a battle with low energy blasts, trying to give the impression of a light cruiser. However, when the Invincible closes in for a laser kill . . . surprise!

Anyone who enjoys Star Trek™ simulations must play STARBASE 3.2.

Requires 16K program memory space (Atari requires 24K).

See reviews in A.N.A.L.O.G., 80 Software Critique and Game Merchandising.

Price: $13.95 Cassette
$17.95 Diskette
Sample Display (Atari): $20.45 8" CP/M Disk




## SPACE EVACUATION

(available for all computers)

How many people can you evacuate from Earth before the sun explodes? Your computer becomes the control console of a giant spaceship in this exciting simulation as you determine which worlds can be colonized, make those worlds habitable, and transport people through space. You have 500 years for your mission, but your ship is limited to the speed of light, and colonization takes time. Choosing the best travel routes and colonizing procedures can be critical. The goal is to save everyone. However, the highest recorded score is 97%. Can you do better?

Requires 16K of program memory
(Atari version requires 24K)

Price: $15.95 Cassette
$19.95 Diskette
$22.45 CP/M Disk

## TRS-80 GAMES PACK III, IV, and V

(TRS-80 only)

Here are three collections of game software written specifically for the TRS-80. Almost all of the programs are graphics oriented. Each is professionally written by a DYNACOMP author, and each is sure to please you. We expect to sell quite a few of these collections because they are such a bargain. Minimum RAM: 32K (cassette), 48K (diskette).

### GAMES PACK III

BUY LOW/SELL HIGH – A stock market and investment simulation for 1 to 3 players. Educational, and fun, too!

HYPERDOM – A dominoes-like game which combines coordination, graphics, and skill.

PYRAMIDS OF GAR – A graphics adventure.

Price: $19.95 Diskette

### GAMES PACK IV

SUBMARINE BLOCKADE – An action and sound arcade game with submarines, airplanes, mines, etc. (machine language for fast play!).

AIR DEFENSE – An action and sound game involving airplanes and missiles (machine language).

STARSHIP DOGFIGHT – This is an extremely good graphics/arcade game similar to Atari's SPACE RAIDERS™. Includes sound (machine language).

Price: $19.95 Diskette

### GAMES PACK V

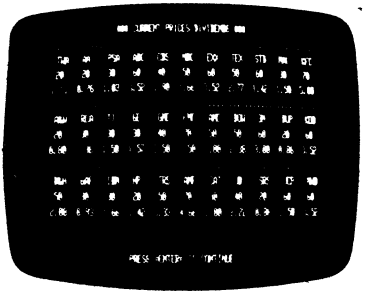
LUNAR VOYAGER – The classic LEM LANDER, but with new twists: you draw your own lunar landscape, and you must return to the mother ship after landing.

SPACE PIRATES – An action/graphics arcade game. You move and rotate your ship to fire at invading ships.

SPACE ATTACKERS – Action similar to Atari's SPACE INVADERS™.

Price: $19.95 Cassette or Diskette

Sample displays:



## BOA

(Apple only)

Simply put, BOA has excellent graphics and sound, as well as an exciting game format. It has received very favorable reviews in *InCider* (8/83) and *Softalk* (6/83).

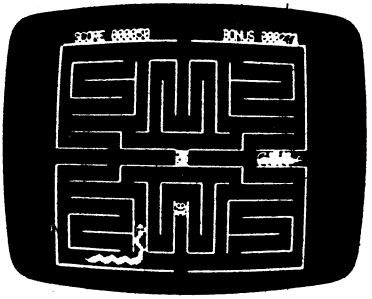
The objective is to eat all of the white mice and rats at each level of the caves in order to reach and completely encircle the jewel at the highest level of the caves. At the same time, the white mice and rats try to keep you from reaching the jewel by attacking, and eating, Boa's tail.

The white mice can eat the magic cheese in the center of the caves and turn into white rats. The rats are more vicious than the mice. At each, more complicated level of the maze, the number of mice and rats increases. This means that Boa must be faster and more efficient at each level to survive until he reaches the highest level of the caves. Rats are very nutritious and each time Boa eats one, he grows a new segment to his tail. There is also an enchanted frog, but we will let you find out about that yourself!

Requires 48K. Paddle/joystick recommended, but not necessary.

Price: $29.95 Diskette

Sample display (Apple):



## ATARI GAMES PACKS III, IV, V, VI, and VII

(Atari only)

Judging by our experience with GAMES PACKS I and II, game collections are very popular. Therefore we have assembled five more.

These are *not* public-domain programs. Each program is full-featured and has been professionally written by DYNACOMP. In addition, every title has an associated user's manual. Minimum RAM 32K. One joystick required. Each collection is *well worth* our low price of only $19.95 per diskette.

### ATARI GAMES PACK III

| | |
|---|---|
| EUCHRE | ESCAPE FROM VOLANTIUM |
| FOREST FIRE | INTRUDER ALERT |
| SPACE TRAP | TRIPLE BLOCKADE |

Price: $19.95 per Diskette or Cassette

### ATARI GAMES PACK IV

| | |
|---|---|
| BACCARAT | LIL' MEN FROM MARS |
| MIDWAY | RINGS OF THE EMPIRE |
| ROLLERBALL | ALPHA FIGHTER |

Price: $19.95 per Diskette or Cassette

### ATARI GAMES PACK V

| | |
|---|---|
| STUD POKER | CRAZY CHASE |
| QUINTOMINOES | SUPER TANK ATTACK |
| CHOMPELO | SPACE TILT |

Price: $19.95 per Diskette or Cassette

### ATARI GAMES PACK VI

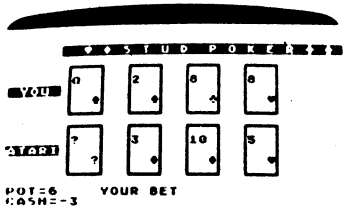
| | |
|---|---|
| COSMOS | DIAMOND HUNTER |
| NEBS | DRAGON BLAST |
| GOMOKO | DOODLE DRAWER |

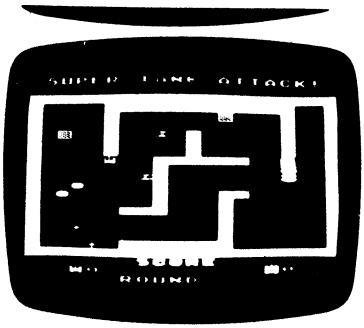
Price: $19.95 per Diskette or Cassette

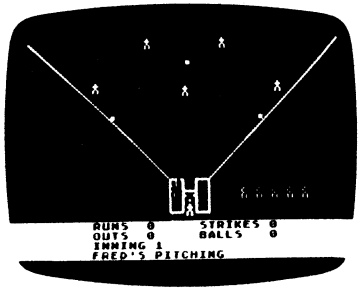
### ATARI GAMES PACK VII

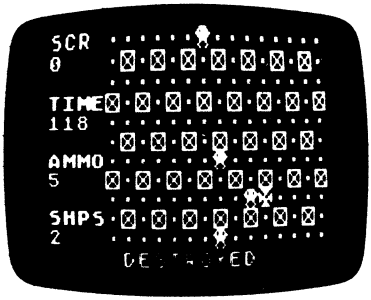
| | |
|---|---|
| COMPUTHELLO | FINAL ASSEMBLY |
| ALVIN | CACTUS LEAGUE |
| GOLF PRO | BASEBALL |

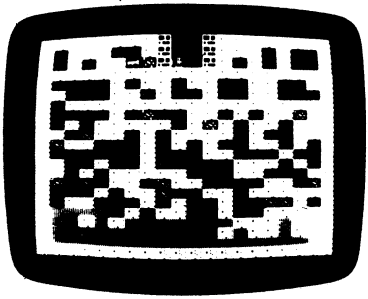
Price: $19.95 per Diskette or Cassette





## RIVER CHASE
(Commodore 64 only)

If you thought only a British secret agent could turn a quiet river into a madhouse, think twice. Let our champion, Higgins, take you on the most exciting boat ride of your life.

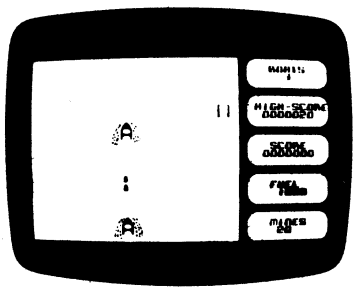
In RIVER CHASE your mission is to save Higgins from a fleet of deadly gunboats. It's a tough task requiring lots of skill and good strategy.

RIVER CHASE is a fun and fast game with excellent graphics and music. Strap on your life jacket and get ready for the action!

Requires a joystick.

Price: $19.95 Diskette

Sample display:



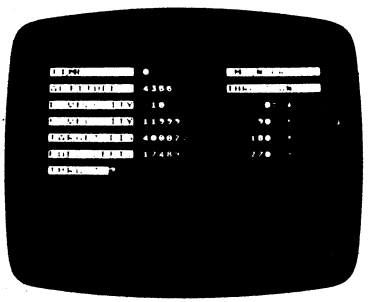

## MOONPROBE
(available for all computers)

Navigate your Lunar Lander to a precise (and hopefully safe) landing on the surface of the moon. This program starts you out in a stable orbit above the moon's surface. By varying the Lander's attitude and amount of thrust you direct the probe to slowly drop from orbit. You must land at the predetermined probe site. To do so accurately and without running out of fuel is quite a challenge!

Requires 16K.

Price: $12.95 Cassette
$16.95 Diskette

Sample display (Atari):



## GAMES PACK I and GAMES PACK II
(available for all computers)

Each of these two software packages contains an interesting cross-section of traditional computer games. The packages are conveniently set up as one large program. This allows you to return to the control program after completing one game and immediately run another game without having to reload. This feature is very useful for cassette users.

GAMES PACK I includes simple physical models, such as CATAPULT and LUNAR LANDER; an excellent mathematical brain teaser, SWITCH; and entertaining gambling games: BLACKJACK, HORSE RACE, CRAPS, and SLOT MACHINE. Manual: 11 pages.

GAMES PACK II contains the popular word puzzle of JOTTO; two entertaining card games: ACEYDEUCEY and CRAZY EIGHTS; the fascinating game of LIFE plus WUMPUS, NUMBER GUESS, and CALENDAR. Manual: 7 pages.

GAMES PACKS I and II require 16K of program memory. (the Atari versions require 24K).

Price: $14.95 Each Cassette
$18.95 Each Diskette
$21.45 Each CP/M Disk

Sample displays (Atari versions):

## APPLE GAMES PACK III, IV and V
(Apple only)

Some time ago DYNACOMP started a search through the public-domain libraries to find software which could be offered to DYNACOMP customers as a service. What we found was largely a group of half-written programs, beginner exercises, and magazine software. After reviewing *many* volumes of diskettes, we came up with over 300K of nice software which, after some reorganization and cleaning up, was collected into a three-diskette set. Each diskette is packed with programs, is autoboot, and contains a menu from which you may select the programs on that diskette. These packages are entertaining and *well worth* the low price we ask.

**Games Pack III**

This diskette contains 25 programs including:

| | |
|---|---|
| BLACKJACK | GOLD MINE |
| CHECKERS | GOLF |
| COMBAT | HOCKEY |
| CRAPS | HORSE RACE |
| CRIBBAGE | KINGDOM |
| FOOTBALL | MASTER MIND |
| FOX AND HOUNDS | PING PONG (HI-RES) |

*AND MORE!*

Price: $9.95 Diskette

**Games Pack IV**

This diskette contains 13 programs, some of which employ HI-RES graphics. They are:

| | |
|---|---|
| ALIEN (HI-RES) | CRUISING |
| ANAGRAM | DRAGON MAZE |
| ASTEROIDS (HI-RES) | FORT |
| BASKETBALL | GEOGRAPHY |
| BOGGLE | LASER SEARCH |
| CHESS (HI-RES) | STAR LANES |

CRIBBAGE II

Price: $9.95 Diskette

**Games Pack V**

This diskette has 9 programs, including one particularly nice graphics game. They are:

| | |
|---|---|
| KING | OIL |
| ATOM BOMB | MONOPOLY |
| INSPECTOR | OTHELLO |
| KENO | SPLAT |

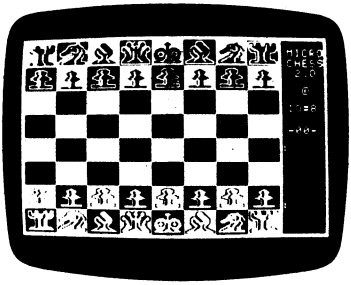
ALIEN INVADERS (HI-RES)

Price: $9.95 Diskette

COLLECTION PRICE: All three diskettes may be purchased for a combined price of $25.95.

NOTE: GAME PACK III, IV, and V are priced too low to allow them to be applied towards quantity discounts.

Sample display:



## APPLE GAMES PACK VI
(Apple only)

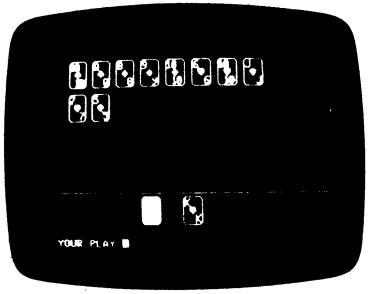
Here is one of DYNACOMP's special game collections. GAMES PACK IV (for the Apple) contains four full featured, professionally written (by DYNACOMP authors) programs which are selected from a single autoboot menu. They are:

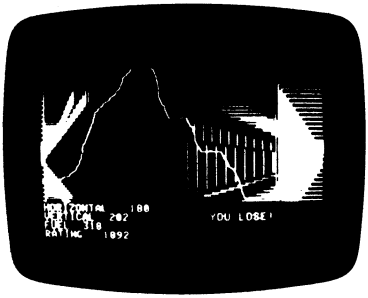
- POKER MACHINE – a five card draw poker simulation of the Las Vegas card playing slot machines. Graphics.
- GIN PARLOUR – The classic gin rummy game which pits you against the computer. Uses standard game conventions. Includes graphics, sound, instructions for playing gin rummy.
- OFF THE WALL – A graphics arcade game similar to Atari's BREAKOUT™. Requires a paddle.
- LEM LANDER - HI-RES real time graphics simulation of lunar excursion module maneuvering. Several terrains are available. Requires a paddle.

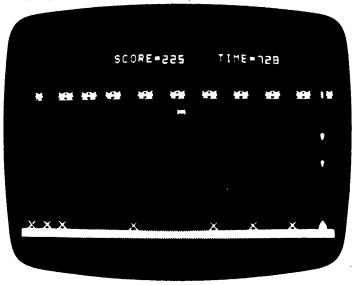
48K RAM MINIMUM.

Price: $19.95 Diskette

Sample displays:



## THE HIVES OF MARTA

(Commodore 64 only)

What an awful name for a great game! However, that's what the game is about.

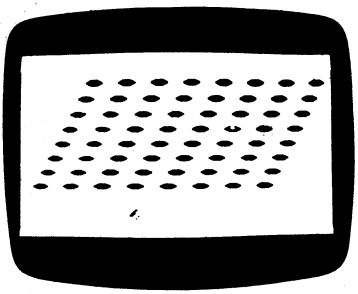
As you might expect, this game is about insects, and is *busy*. You are trying to colonize the planet Marta. To do so you need to capture (alive) a *giant* queen bee for examination. The first problem is that you have to limit the queen to one set of tunnels in the hive, so that you can corner her. To do this, you must blow up tunnels with your missiles so that the queen can not pop up out of one tunnel and jump into another. You have to accomplish this without destroying the queen.

Once limited to one tunnel complex, you have to go in after her. Don't bump the walls — you may trigger traps. There are also three types of soldier insects: patrollers, attackers, and warriors. There are also lava pits. You must clear your way, chamber by chamber, shooting your laser gun, stabbing with your bayonet, kicking eggs into the lava pit, etc. Finally, when you reach the queen's chamber, you must shoot her with a tranquilizer. Sounds like a pretty involved process, doesn't it?

Our photographer tried running the program to get to a point in which a nice screen photo could be snapped, but he didn't get past blocking the tunnels. Can you do better?

Price: $17.95 Diskette

Sample display:



## DIGGERBONK

(Atari only)

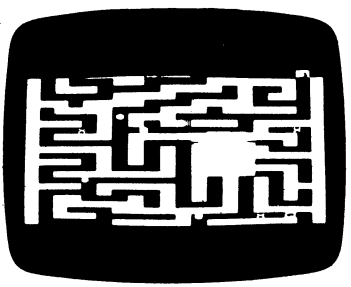
DIGGERBONK is a fast-moving, single-player arcade game for ages 8 and up. The object of the game is to find your way through a moving infinite maze without getting trapped or "bonked". At the same time you must collect as many objects (orange whirlers, pulsing greenies, and twinklers) as you can while avoiding the enemies (purple gurple, yellow blinker, and aqua chaser) and bombs, and fighting your way through fog.

DIGGERBONK is played with a single joystick. It requires judgement, skill, foresight, and strategy. It has nine levels of difficulty. The game keeps track of the highest score attained. The player motion is smooth (machine-language game) and the graphics are good.

Requires 16K (cassette) and 32K (diskette) and one joystick. DIGGERBONK is also available through the Atari APX for $24.95.

Price: $15.95 Cassette
$19.95 Diskette

Sample display:



## THE BEAN MACHINE

(Atari only)

An Atari APX award winner!

The object of the BEAN MACHINE is to maneuver 33 beans as quickly as possible through the BEAN MACHINE. The beans begin on the bottom trough where they roll into the machine from the left. At the end of the trough waits an elevator. The beans are carried up the elevator. On the way they may fall into some ramps which will carry them to one of five teeter-totters. If they reach the top of the elvator, they are moved across the top of the machine via a conveyor belt. At the end of the conveyor they fall into a chute with a trap door. If the trap door is closed, they are diverted to a ramp. Otherwise, they fall through the trap door to one of the teeter-totters. What you must do is maneuver the teeter totters to get the beans to their final destination as quickly as possible.

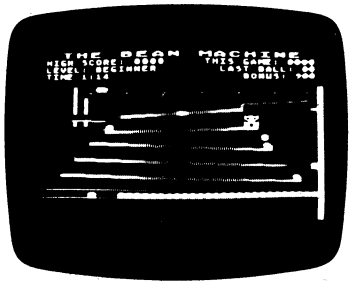
Of course, it's not as easy as it sounds. Spiders like to eat the beans, and so does Horrible Mitch (he usually just steps on them). Also, the beans are very fragile; if you let them collide, they break. Each bean is worth 100 points at first. For each second it takes you to get the bean to its destination, it loses a point in value. A bonus will be added to your score depending upon how long it took you to get all 33 beans home.

All ages can play the BEAN MACHINE. It has beginner, intermediate, and advanced levels of play.

Requires 24K (cassette), 32K (diskette) and one joystick. Atari APX price is $24.95.

Price: $17.95 Cassette
$21.95 Diskette

Sample display:



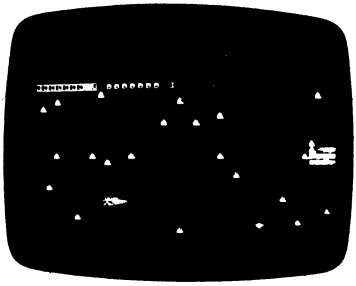
## LOCOMOTION
(Atari Only)

Here is a fast-paced arcade game which vaguely resembles CENTIPEDE™. However, the field is more complicated and there is more action. Your basic target is a moving train which has a locomotive, cars, and a caboose. While you are at it, you can also shoot (for bonus points, of course) trees, deer (big points), or the flagman. There is some danger, however. You can be run down by the train, deer, or the flagman or be struck by lightning. Your man can move left, right, up, and down . . . he will *have* to to survive!

The graphics and sound are superb. Requires one joystick and 32K.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



## HOPPER
(Atari only)

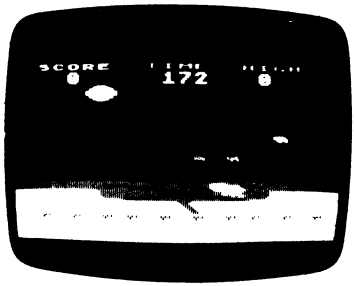
HOPPER is an action arcade game for pre-teens and up. You are controlling a playful frog who enjoys eating insects. Your frog can jump all around, but make sure he comes back down on a lily pad; this frog is a *terrible* swimmer!

HOPPER uses the special features of the Atari such as redefined display lists, new character sets, player/missle graphics. Employs machine-language routines for a smooth display.

Requires 48K and one joystick.

Price: $17.95 Diskette

Sample display:



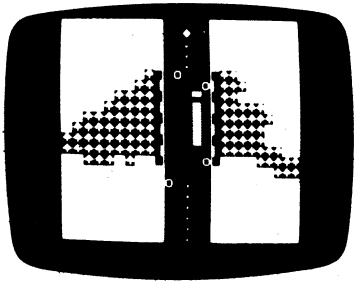

## AMBULANCE
(Commodore only)

AMBULANCE is an exciting real-time game in which the object is to drive your ambulance down a winding road containing obstacles (dogs, cars, and trucks). The ultimate goal is to get to the hospital and park (in an empty spot) as quickly as possible. There are three levels of play, and your speed can be from 1 to 100 MPH. Control is through keyboard input.

Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

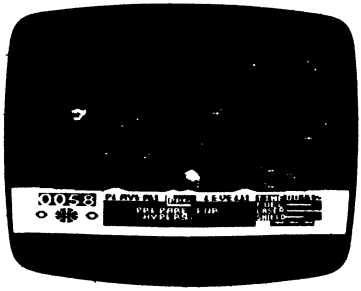


## PERPLEXIAN CHALLENGER
(Commodore 64 only)

This is a top-notch graphics game. It is programmed entirely in machine language so that the action is fast and the graphics smooth. The graphics include smooth 3-D rotations, split screens, and high-resolution sequences. Sound effects abound, including music during the program load. All the professional features you might expect are included: automatic self-demonstration, high score save, pause, and capacity of 1 to 4 players. The joystick control of your space fighter is three dimensional and fast. The screen shows your ship's instrumentation and the 3-D view of space. Requires a joystick.

Price: $29.95 Diskette

Sample display:



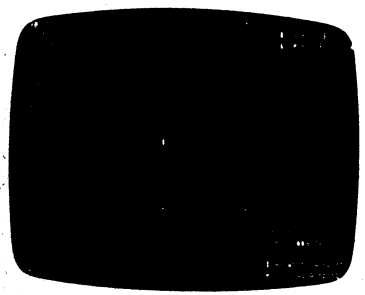
## SNAKE™
(CP/M and IBM only)

SNAKE is easy to learn, with many variations and levels of difficulty—the perfect game for all members of the family. The SNAKE moves about the screen, avoiding obstacles and eating food which appears at random for a short time. As it grows, quick reflexes and mental anticipation are needed to avoid a fatal collision. Increase the challenge by speeding up the SNAKE, adding obstacles, or moving to the Advanced Game with bridges and a tunnel. The Progressive Game dares the real expert to pile up huge scores by keeping the SNAKE moving in the face of ever-increasing obstacles. A sophisticated scoreboard lets players compare their best scores.

Requires 80-column screen and 48K of RAM.

Price: $19.95 Diskette
$22.45 8-inch CP/M Disk

Sample display:



Written by Software Toolworks

## PAPER BOY
(Apple and Atari only)

Former newsboys and non-newsboys alike will enjoy this arcade game. In PAPERBOY your job is to deliver newspapers to every house on the block. This would be easy were it not for the four rabid bulldogs roaming the neighborhood. These dogs will chase you relentlessly, and if one catches you . . .

The only weapon you have against the dogs is your papers. Throw one at a dog and he will be stunned temporarily. Don't throw too many papers at the dogs because if you don't have enough papers to finish your paper route you'll lose your job and the game ends. Keep in mind that you have a time limit, too. PAPERBOY features joystick control, exceptional graphics and sound, and a real-time clock.

Good luck on your new paper route!

Requires 24K (Cassette), 32K (Diskette), and one joystick.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

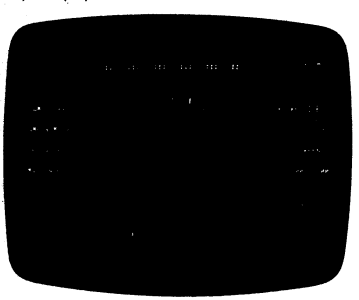
## AIRPORT™
(CP/M only)

This challenging action game tests your skill as an Air Traffic Controller. Your terminal's screen becomes a radar screen filled with aircraft under your guidance. Flight plans (landing, takeoff, or transit) are radioed to you. Guide all 26 aircraft safely through and you win. Violate FAA rules with a "near miss" and you're fired! Made it? Try it faster! Every game is different.

Requires 80-column display and 48K.

Price: $19.95 Diskette
$22.45 8-inch CP/M Disk

Sample display:



Written by Software Toolworks

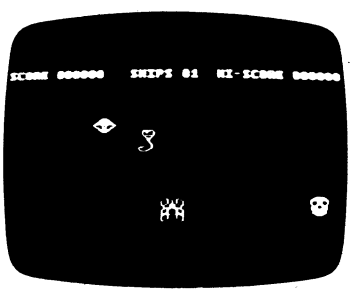
## GALACTIC BATTLES
Commodore 64 only)

SX-Vanguard, an explorer ship, has accidentally entered an alien universe dominated by a group of violent robots.

To return to your universe you must pass through the DRION Kingdom with their odd shapes, the Vorian region, and the various and increasingly difficult Xendas levels. You must maneuver your ship well, shoot straight, and duck a lot! The graphics are excellent. Requires one joystick.

Price: $19.95 Diskette

Sample display:




See the REVIEWS section for additional information.

## POLYPS FROM PLUTO
(Commodore 64 only)

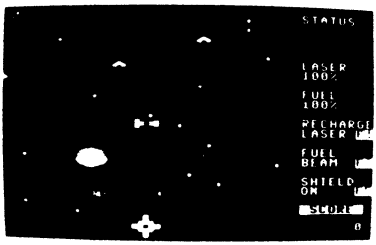
You've just been promoted to the ranks of the Planetary Federation's elite Defender Corps. The Federation's colonization program has encountered a serious setback. Solar refueling stations, vital to the program, have been disappearing mysteriously. The Defender Corps has been assigned to guard the remaining unmanned stations from this unknown destructive force.

You arrive at your assigned sector. Suddenly your attack display comes up and your weapons system is activated. Your nerves tingle as you see your status display turn green . . . yellow . . . RED! What are those things? They're firing at the station! They're Plutonian Polyps! Quick, put the shield up! Nobody thought they were intelligent, let alone dangerous! And here they are, attacking in swarms!!

Great Graphics! Requires one joystick and a brave operator.

Price: $19.95 Diskette

Sample display:

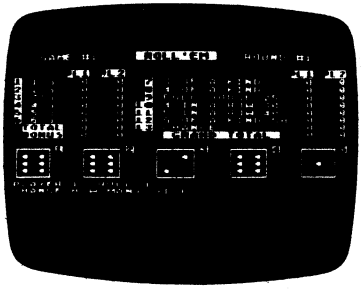



## ROLL 'EM
(Atari only)

ROLL 'EM is a dice game for one to six players. It closely follows the rules and play of the popular game, YAHTZEE™. The object is to score as many points as possible in thirteen rounds using the rolls of five dice. As with YAHTZEE, skill, strategy, and luck are all needed to win. ROLL'EM requires 16K (cassette) or 32K (diskette).

Price: $ 9.95 Cassette
$13.95 Diskette

Sample display:

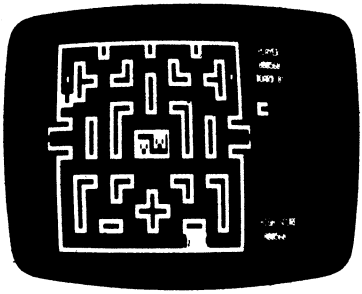


## TRASH MAN
(TRS-80 only)

At last! The arcade comes to the TRS-80! Despite the limited graphics capability of the TRS-80, the arcade qualities of this game are very impressive. The objectives and play in TRASH MAN are related to the ideas involved in PAC MAN and JAW BREAKER. The arrow keys are used to direct the motion of your player. As your man moves and consumes objects, the score climbs. However — beware of ghouls! Not available for the Model III or IV.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



## TYPEOUT
(Atari and IBM only)

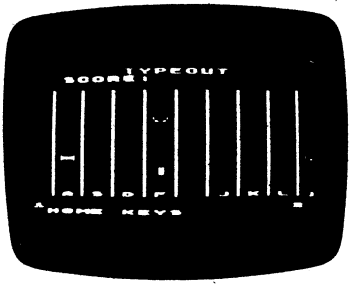
HELP!!! We are being attacked!!! No, we are not being attacked by space invaders, or asteroids, or gorillas, or even ghosts. Those wimps were nothing compared to what we are faced with now — nasty, mean, icky, mutant letters!!! That's right, mutant letters, and only you can stop them. Your mission (should you decide to accept it) is to TYPEOUT these nasty mutant letters before they can wipe you out!!!!

TYPEOUT is a game developed to help you learn the Atari keyboard. TYPEOUT has multiple levels (each level stresses a certain keyboard area), can be played at multiple speeds, gives extra men, saves the high score, and is lots of fun.

Requires 16K and quick wits.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:




See the review in *ANTIC* magazine.

# DYNACOMP *has software which makes your computer worth having!*

**BE SURE TO CHECK DYNACOMP'S PRICES ON SUPPLIES**

Remember that our diskette prices are not only low, but that you *also* get a FREE plastic library box with each order of ten diskettes. In addition, we sell *only* brand names, and *all* of our diskettes come with sleeves (*not* bulk pack) and hub rings — and they are guaranteed!

Call for quantity discounts (on orders for more than 200 diskettes).

## BLACK HOLE
(Apple only)

BLACK HOLE is a visual simulation of the problems associated with closely observing a small black hole. The object of the simulation is to enter a defined close orbit about a black hole, maintain it for a given length of time, and then exit. Of course, if you use too much fuel in achieving the orbit, you may not be able to later break free.

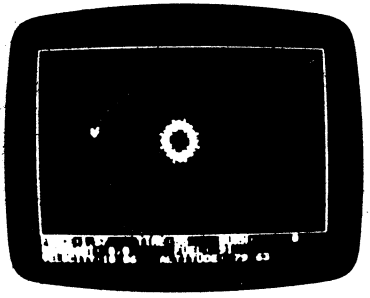
The black hole acts as a point source of gravity. Your probe is outfitted with a main thruster and may be rotated to direct the force. The path taken by the probe is displayed so that you may better understand the interplay between the thrust and its direction, and the subsequent change in trajectory.

BLACK HOLE is not only entertaining and challenging, but is also educational. Notice how the probes speed slows towards the apogee. Is angular momentum conserved under free fall? See Kepler's and Newton's laws in action!

Runs in 16K.

Price: $15.95 Cassette
$19.95 Diskette

Sample display:



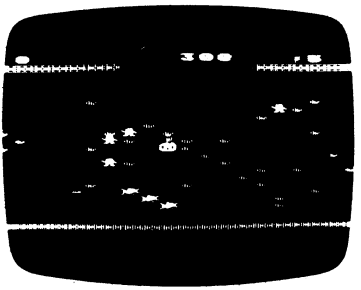
## INFERNO
(Atari only)

INFERNO is an arcade-like game in which you are a fireman trying to save people trapped within a burning building. Each building consists of seven floors, with people on each floor. There are five buildings. You must travel through each building with your fire extinguisher, locate the trapped people, and rescue them. Naturally the fire is getting worse as you go, and the situation becomes pretty frantic.

Requires one joystick and 32K (cassette), 48K (diskette).

Price: $ 9.95 Cassette
$13.95 Diskette

Sample display:



## HINT
(CP/M)

FILE NOT FOUND. Simply put, the computer cannot find the file you named. Did you use CAPITALS? Although some machines allow lower case letters, it does not always work. Check the directory for the right name.

# THE DYNACOMP BOOK COLLECTION

## DISCOUNTS

If you purchase 3 to 4 books, you qualify for a 10% discount. At the 5 plus level, deduct 20%. Also, DYNACOMP's software-dealer discount schedule also applies to books. Note, however, books and software are discounted separately.

## SHIPPING AND HANDLING

For orders to be delivered within the continental United States, please include $2.00 shipping and handling for the first book, and $1.00 for each additional book. For orders to be delivered outside the continental United States, please include $6.00 for the first book, and $4.00 for each additional book. Orders mailed outside the United States are shipped via surface mail.

BASIC SCIENTIFIC SUBROUTINES, VOLUME I by Dr. F. R. Ruckdeschel

See the REVIEW section for a description.
316 pages, hard cover. Price: $27.95

BASIC SCIENTIFIC SUBROUTINES, VOLUME II by Dr. F. R. Ruckdeschel

See the REVIEW section for a description.
790 pages, hard cover. Price: $29.95

NOTE: Both Volume I and Volume II are available in Japanese.

### DOING BUSINESS WITH SUPERCALC by Stanley R. Trost

You know SuperCalc can perform near-miracles, but how? Here are more than 40 practical business applications for SuperCalc. Applications range from financial statements, to master budgets, to pricing models and investment strategies. Each application is worked through in step-by-step detail, making the SuperCalc electronic spreadsheet as easy to use as a pocket calculator, yet as powerful and versatile as a complete library of business programs. Don't let the power of this program go to waste - see it solve those business problems!

248 pp., illustrated. Price $14.95

### THE CP/M HANDBOOK by Rodnay Zaks

This beginner's guide contains step-by-step descriptions of all the CP/M commands and features. It shows you start-up procedures, detailed explanations of the file transfer program (PIP), the debugging program and CP/M's text editing program (ED). Appendices summarize commands, parameters, error messages, and conversion tables.

*"If your future in computing goes beyond playing games – you'd better have a copy of this book on your shelf." – 80 Microcomputing*

320 pp., 100 illustrations. Price: $14.95

### THE BEST OF CP/M SOFTWARE by Alan R. Miller

Get the best available software for your CP/M system. Software experts review commercially available software for word processing, financial and scientific analysis, language, communications, and business applications. Dictionary programs are evaluated in detail. Find out which programs have the features you're looking for, and how they compare to other programs of the same kind. A listing of additional support material - publications, books, user groups - for each program is also included. Make sure you get just what you need for your computer.

250 pp., illustrated. Price $14.95

### MASTERING CP/M by Alan R. Miller

Now you can use CP/M to do more than just copy files. For CP/M users or systems programmers - this book takes up where our CP/M Handbook leaves off. It will give you an in-depth understanding of the CP/M modules such as, CCP (Console Command Processor), BIOS (Basic Input/Output System), and BDOS (Basic Disk Operating System). Find out how to: incorporate additional peripherals with your system, use console I/O, use the file control block and much more. This book includes a special feature - a library of useful macros. A comprehensive set of appendices is included as a practical reference tool. Take advantage of the versatility of your operating system!

398 pp., illustrated. Price $17.95

## INTRODUCTION TO WORDSTAR
(Second Revised Edition)
**by Arthur Naiman**

Get off to a smooth start with WordStar. You will quickly understand and use each feature of this powerful word processing program for all of your office tasks: edit copy, move and delete blocks of text, check copy for spelling accuracy, create and merge files, format on-screen, even design special print effects. A convenient and complete dictionary of all the WordStar, SpellStar, and MailMerge commands make this book convenient and easy to use. Plus a special feature...it's illustrated: every entry includes a diagram of the keys used to perform the command. This indispensable, fingertip guide is highly recommended for beginners as well as experienced users. *The newly revised Second Edition shows you how to use WordStar on the IBM PC.*

*"...an indispensable fingertip guide..."– PC Magazine*

202 pp., illustrated. Price $14.95

## PRACTICAL WORDSTAR USES
**by Julie Anne Arca**

Master WordStar and solve all of your word processing problems with ease and efficiency! First get an overview of what this powerful program can do for you. Go on to learn, in a simple, step-by-step manner, how to streamline office productivity. This task-oriented user's guide uses realistic examples to illustrate boilerplate paragraphs, creating form letters with repetitive vocabulary, using a 2-column format to create newsletters, the use of indents in a detailed outline, and other exciting and useful formats available with WordStar. *Includes free WordStar Command Reference Poster.*

200 pp., illustrated. Price: $16.95

## APPLE II BASIC PROGRAMS IN MINUTES by Stanley R. Trost

Get the advantages of programming your Apple II without having to learn how to program! This collection of practical BASIC programs allows you to take full advantage of the Apple II functions, instantly. Calculate home finances, analyze business and personal investments, investigate real-estate options, analyze data, and keep records using this set of ready-to-run programs. Just enter the programs into your Apple II and in minutes you will be ready to compute! Let your computer help you make those important decisions, quickly, easily, and accurately.

170 pp., illustrated. Price $12.95

## YOUR FIRST ATARI PROGRAM
**by Rodnay Zaks**

Write your first BASIC program, *in one hour!* At last, a "how-to-program book" for the first-time computer user, aged 8 to 88. Colorful illustrations and simple diagrams make this book both easy and entertaining to use. In just a few hours you'll know enough BASIC to write complete useful programs on your ATARI. In no time at all you will be writing your *second* program! See how simple it is to program your computer to do exactly what you want it to do!

150 pp., illustrated in color throughout.
Price: $12.95

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DYNACOMP is one of the world's largest distributors of microcomputer software. As such, we purchase supplies and hardware in large quantities and at greatly reduced prices. Let DYNACOMP become your source for the highest quality supplies at the lowest prices available.

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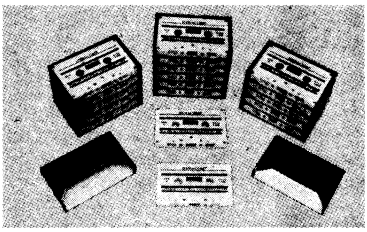
DYNACOMP uses only the highest quality cassettes for its software distribution. These cassettes are employed in-house for the recording of Apple, TRS-80, Atari, PET and NEC programs. Only one tape length is available (C-20). This permits 10 minutes of recording on each side of the tape, which is sufficient for storing a 32K or larger program. The shell is constructed of high quality plastic, with the two halves fastened by five screws. This construction prevents the warping associated with heat-sealed shells (the cheap type found in many stores). Minimum order is 10.



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If you send disks or diskettes through the mail, you have had two choices. You could spend time to cut up cardboard boxes to make a protective sandwich for your floppy, or you could buy a mailer for from 75¢ to $1.50 (or more).

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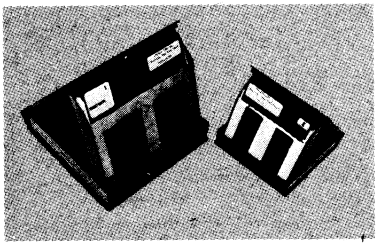
## DISKETTE AND DISK PLASTIC STORAGE BOXES



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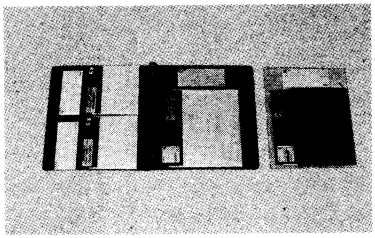

5¼" dual pocket holder
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## MAGIC-STAT™ COMPUTER THERMOSTAT

THE STORY

The story behind DYNACOMP's getting involved with this product is worth telling.

Traditionally, DYNACOMP's president has had low priority when it came to allocating office space. Whenever DYNACOMP needed more space for production, computers, supplies, etc., it expanded into (and through) his office. The movers would be called and he would move to some less vital area. Finally, the next move was to the parking lot!

To solve the space problem, a separate office was built (ground up) for the president. The design, inside and out, was his own. When it came to the thermostat for the heating system, he was going to use a standard Honeywell setback thermostat, the Chronotherm™. However, the one in his home had just broken and, as a result of that unhappy experience, he decided to look more carefully before buying one for the office.

DYNACOMP's president remembered an advertisment for a computerized thermostat from JS&A. He found the same thermostat in the Markline catalog, and purchased it. It arrived. He read the instructions. He installed and programmed it. It was great!

Then he proposed to DYNACOMP's head of marketing that DYNACOMP should carry it. The response was enthusiastic.

As it turns out, the president of Quad Six, Inc., the manufacturer of MAGIC-STAT™, is a DYNACOMP fan, having purchased several DYNACOMP products in the past. Both presidents thought it would be a great idea to put MAGIC-STAT™ into the DYNACOMP catalog. So, here it is.

THE PRODUCT

Forget the claims made by JS&A, Markline and the manufacturer's literature. Here are the strengths and weaknesses of MAGIC-STAT™.

PRICE

The price of MAGIC-STAT™ through the usual catalogs is $79.95 (DYNACOMP's price is $69.95). This is comparable to the price of conventional units, and is considerably less if you count the base plate you have to get for central air systems. Also, MAGIC-STAT™ qualifies for the 15% energy savings tax credit.

INSTALLATION

*The Strengths:* The MAGIC-STAT™ keeps track of time. During the course of a day you may switch the device to LEARN, set the temperature to what you want it to be *at that time*, and switch back to AUTO. The next day the computer will *figure out* when to turn on the heat so that the temperature will come up to the set point at the desired time (more about this later). You may have *six* different set points each day. Each day in the week may have the same set points (default) or *different* if you wish. This flexibility is great for the weekends. You may also manually override the set point control by simply switching to MANUAL and setting the new temperature. Switching back to AUTO restores the program control at the *next* set point in time.

*The Weaknesses:* You must be around to switch the thermostat to LEARN mode and set the temperature. For example, if you want it to be warm when you get home at 5:30 PM, you must come home to a cold house one day and set the control. The next day it *will be* warm at 5:30 p.m. With this thermostat you program as you go through the day. This is the *only* weakness we see in the operation of MAGIC-STAT™.

EXTRA ENEGRY SAVINGS AND COMFORT

Here is where the power of the computer really comes to play. As the *outside* temperature changes, the heat must come on earlier or later to make the *inside* transition from cool to warm. What this means for conventional thermostats is that you have to set the thermostat to turn on extra early in the morning to handle those really cold winter nights. But then it comes on too early on the warmer mornings and you are roasted out of bed! MAGIC-STAT™ is *clever*. While operating in the "cool" mode, it tracks the response of your heating system and figures out when the heat should be turned on in order to reach the desired temperature. It is continually learning and adapting! It does not have to be adjusted for the "advance". There are no adjustments. It is automatic. (Note: when going from warm to cool, the temperature is *maintained* until the cool set point is reached, *then* it drops to the new level.)

The computer allows:

1. Easier installation – no adjustments.
2. *Much* more comfortable control – the temperature reaches its set point at the right time.
3. Since the heat does not come on too early, there is an energy savings over conventional set-back thermostats — about 5% (you can easily pay for the unit with these savings.)

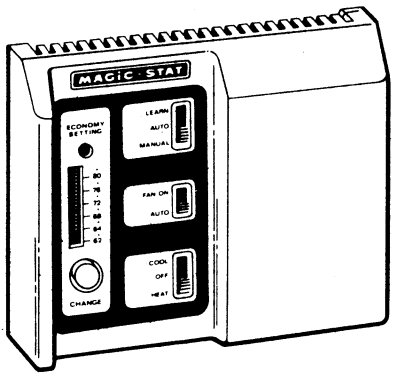
THE WARRANTY

MAGIC-STAT™ is a product which is not only great, but also reliable. It comes with a *three year* "limited warranty" relating to malfunctions.

In short, DYNACOMP found MAGIC-STAT™ to be a great product through personal experience. We are sure you will like it also.

Price: $69.95
plus $3.00 shipping & handling

# MAGIC-STAT®



## THE VOTRAX PERSONAL SPEECH SYSTEM (or DYNACOMP VOTRAX OFFER #2)

Two years ago DYNACOMP advertised and sold the VOTRAX TYPE 'N' TALK speech synthesizer. We also developed several programs for the unit. Sales initially were good. However, competition quickly built in the form of less expensive speech synthesizers, in particular, the VOICE BOX by the Alien Group. We examined these other units and decided not to carry them (even though they were priced much lower than the TYPE 'N' TALK) because of quality differences. Quite simply, they looked like they were made in someone's garage. Also, they relied heavily on software in the computer to do the brunt of the synthesis work.

Faced with the choice of carrying a high quality product at a high price or a lower priced product which did not please us, we decided to drop speech synthesis hardware altogether — until now.

VOTRAX now has a new synthesizer which does everything the TYPE 'N' TALK did, and *much* more. After testing the new unit, we are using one ourselves at DYNACOMP. Here are some of the uses we see:

- A programming aid for the blind. The blind person can hear what is typed on the computer's keyboard.
- A programmed telephone response system. Using a Touch Tone decoder, a human can respond to computer generated questions over the phone; an order taking system.
- An order placing system. Push the buttons on the cash register and the order is "spoken" in the kitchen.
- A printer buffer.
- A parallel/serial or serial/parallel converter.

Hooking up a new VOTRAX Personal Speech System is very easy. First, the speaker is contained *within* the unit (there is also an external jack for another speaker or AUX input). Second, you can connect to the computer either through an RS 232 (DB-25) serial connector, or through a (Centronics) parallel connector. If you can connect a printer to your computer, you can hook up the VOTRAX.

The manual clearly spells out how to hook the system up. We ignored the manual and simply plugged it into an RS 232 port. We weren't surprised when the VOTRAX announced itself, but we were taken back a little when it *told* us that we had connected it incorrectly! The VOTRAX has a repertoire of error messages to help you set it up and operate it. In this case, we had to switch lines 2 and 3 in the DB-25 connector to get it to respond correctly.

There are many ways to use the VOTRAX. To appreciate the *many* possible uses, a brief hardware description is useful.

You may choose to send information to the VOTRAX either through the serial or parallel ports. If you choose to use the serial port, you may set switches to determine the baud, parity, hardware (RTS/CTS) or software (X-ON/X-OFF) handshaking, etc. You can override these by sending particular commands to the unit also. The input is buffered (3,500 characters) so that you can quickly (e.g., 9,600 baud) send information to the VOTRAX and have the computer go on about other business while the VOTRAX is speaking. However, the unit echoes *back* what it is speaking through both the serial and parallel ports. Since you can adjust the speech rate, you have control over the echo speed. Thus you can connect a printer up and use the VOTRAX also as a buffer (spooler). Or you can do serial/parallel or parallel/serial conversion.

VOTRAX combined a synthesizer with a Z80 microprocessor and created an interesting computer! They also included some very interesting features in the internal ROM which supervises this CPU. For example, you can set the *time* in the VOTRAX and have it say the time on cue, or automatically (every 15 minutes). You can also program in alarms and cues!

Of course there is a self-test mode (it talks as it tests), volume control, chime, etc. Now we come to the speech (*and music*) synthesis.

There are two basic speech modes: text and phonetic. You may simply send text to the VOTRAX just as you would to a printer. The VOTRAX is pretty smart and will do a fairly good job of pronouncing it. For example, this catalog description could be sent directly to the VOTRAX with very good results.

In the phonetic mode you can send sound constructions made of phonemes. These can be directly mixed with text-mode speech. For example, you might find the text mode pronunciation of hors d'oeuvre to be not very good. Therefore the phonetic construction might be useful. Included in the package is a 1,400-word dictionary having phonetic equivalents. Text and phonetic pronunciation may be mixed.

You may also control various characteristics of the speech by simple commands sent out with the text.

For example:

Amplitude fade: @ Aar
a=master audio level (0-F)
f=fade rate (0-F)

Speech Rate: @ Rr (r=0-F)

Voice mode: @ Vm
m=0 standard
m=2 tones off
m=4 tones on

Inflection: @ i (i=0-7)

Naturally, when the unit is turned on, default values are chosen; you do not have to set any values unless you want to. The same is true for the music and sound-effects mode.

The basic music tone command controls the channel (there are three), note (C1 through B8), duration (in tempo units), hold (in tempo units), amplitude, and glide. You may also control the envelope for each note in the following terms: channel, attack rate, decay rate, sustain level, and release rate. You may also add noise and define the tempo. In other words, you can do a fairly complete job of music synthesis. In addition, you can combine the speech and music modes.

The thing that we found very interesting and appealing is that the unit is not only capable of very complicated speech and music synthesis, but is also very easy to use; you can choose your own level of involvement.

The VOTRAX PERSONAL SPEECH SYSTEM is well built (e.g., the case is cast aluminum) and comes complete with a factory warranty, clear manual, and quick reference card.

Suggested list price is $399.95 but DYNACOMP's price is only $299.95. Price does not include cables.

## MAILING LABELS

We recently had the opportunity to visit a Radio Shack store and were amazed at some of the prices (high!). One particularly high-priced item was tractor-feed one-up (15/ah" × 3½" by 11 per fan fold) mailing labels. DYNACOMP uses the same labels for its catalog mailings, and usually we purchase a few hundred thousand at a time. Therefore, DYNACOMP gets a very good volume price break and can pass some of those savings on to you.

Price: $3.95/1,000 (1,000 to 4,000)
$3.49/1000 (5,000 and up)

Minimum order: 1,000 labels
Orders must be in multiples of 1,000 labels.
Shipping is $3.00 per order, independent of quantity.

## Software Reviews

# Children's Carrousel, games for 2- to 6-year-olds

*By Jay Lucas*

Well, the keys of my Apple are sticky again, and the screen is wavy with the distortion that only kiddie goo can impart to the face of a TV.

I really don't mind, though. I've hit on another gem of a children's program that helps kids up to about six years old learn their numbers, the alphabet and other prereading and prearithmetic skills while having a good time. This software even has sections for the younger set: my two-year-old feels right at home with the games included at his level.

Though the program has solid educational worth, the "spoonful of sugar" is evident throughout each of the nine games. In this case, the "sugar" is a colorful and well-animated carousel graphic that spins in time with appropriate merry-go-round music when the child has achieved a certain level of proficiency. There is no scoring *per se*, but when the child has done well, he knows it.

Is it successful? Believe me, I try to check a lot of educational software, and my poor son Zachariah often turns to me sighing plaintively, "Daddy, I'm bored. Can I go watch the Dukes?" A worse insult to some software no human can proffer!

Such damnation does not resound with the Children's Carrousel; a half-hour spontaneous session is quite usual.

**FEATURES:** Children's Carrousel is a collection of nine different games for prereading or just-learning-to-read children. They vary in target group from two-year-olds to six-year-olds, and as you'd expect, they ask more refined actions and logic skills from the older groups. Significantly, none of the games are graded; when your child is ready for a game, he can try it without being labeled.

**InfoWorld**
**Software Report Card**

***Children's Carrousel***

| | Poor | Fair | Good | Excellent |
|---|---|---|---|---|
| **Performance** | ☐ | ☐ | ☐ | ☑ |
| **Documentation** | ☐ | ☐ | ☐ | ☑ |
| **Ease of Use** | ☐ | ☐ | ☐ | ☑ |
| **Error Handling** | ☐ | ☐ | ☐ | ☑ |

***System Requirements***

- Apple II Plus
- DOS 3.3
- 48K RAM
- One disk drive
- Color monitor preferred

Price: *$19.95*

***Dynacomp, Inc.***
1427 Monroe Avenue
Rochester, NY 14618
(800) 828-6772

The first game is simply the alphabet, with the twenty-six letters placed on the screen accompanied by the alphabet song. Each letter is about an inch and a fraction high, and the game displays a wide range of colors.

The second game is also for the tots; it is called Shooting Stars, and it scatters random multicolored exploding stars across the screen, each star appearing with a sharp tone whenever any key is pressed.

Probably neither of these programs sounds like a major miracle to the typical *InfoWorld* reader, and I agree—I prefer a bit more inherent interest in a game. My little two-year-old, however, sits in front of the screen and tries to sing the alphabet song with the machine over and over, and he loves making those stars happen. *He himself* pushes the button and makes the sound and picture show up on the screen.

The next three games play with learning the concepts of shapes and colors. The first is called Same or Different. Two big colorful shapes appear on the screen side by side, over a large *S* and a large *D*. If they are the same, press the S key, hear a pleasant tone and see part of your carousel horse appear on the lower section of the screen. If you press D when you should have pressed the S key, you hear a raucous buzz.

When you correctly identify the similarity or dissimilarity of enough shapes, you accumulate sufficient parts to complete the carousel horse. This entitles you to a ride on the carousel, the colorful opening animated graphic.

The fourth game is similar to the third, but more challenging. At the top of the screen are four random objects, each with a number attached to it. A fifth object is pictured in a box. Pushing the number of the object that is the same shape as the object in the box wins your kid his horse-part. The challenge comes both from the number recognition involved and the more complicated instructions.

The fifth game is the most difficult of its type: a colored block appears on the screen and then disappears. The child must remember the color and then choose that color's number from the next display screen of four colors. This is the only game that *requires* a color TV, but your kid's enjoyment is enhanced if you use a color set for the entire program.

The next three games are for the older tykes. The first of these, game number 6, blasts random colored one-inch letters to dust when your child presses the matching key on the keyboard. Now there are no more limited numbers of keys—all letters are fair.

There is no time limit, though, so the objective is accuracy and the pleasant sound of reward, rather than the cacophonic buzz of error. On the screen the shooting is performed by an energetic sliding gun, and the scoring is again rendered in carousel-horse pieces. Now your player needs three horses to ride the carousel and win the game.

Games 7 and 8 are both in the same genre—fill in the blank with the missing letter or number within the set of three displayed. For example, in game 7, Counting Challenge, you may see the numbers 12, _14—displayed, of course, in the bold one-inch characters. When your child enters the correct answer, 13, he gets happy music. The game deals with numbers from 1 to 20. Game 8, Alphabet Alert, operates similarly. It requires your child to supply the missing letter in an alphabetic sequence of three. Thus on completing *A*,B,C with the missing *A*, the child wins the round.

All three of these games held my six-year-old's interest.

The last game is simply a typewriter that displays in big, colored letters on the screen the keys that are pushed on the keyboard. The carriage Return key acts appropriately, as does the Back Arrow (rubout) key. Of course, with only eight characters per line and four lines, the threat of driving WordStar off the market with this software is unlikely.

The kids enjoy seeing their names up on the screen. Since this is really practice for children like my six-year-old, who are just starting to read and write, it seems an appropriate level at which to end off the Carrousel program.

**PERFORMANCE:** The program does its job well. It is a colorful, captivating set of games that really involve the children in a thinking environment. It is not the only program for kids that your household should have, but it certainly can take a place in your educational-software library. It's too bad the program does not have more fine games for each age category. You do get your money's worth with the nine that are given.

Of course, I do have a few little grudges. The first game, the alphabet recital for younger children, turns off too easily. When any key at all is hit, the alphabet stops and the menu of nine choices appears. This creates a fair amount of frustration for these youngest users, who are habitual and fanatic button pushers. In the counting game, the limit of 20 puts a bit of a tight top end on the play.

On the other hand, there are some features that were well considered. Users can exit any game at any point by pressing the Escape key. This feature means a child does not have to keep working at a game he has grown tired of; ultimately this encourages further use. Children's Carrousel has disabled the Apple's Reset key; pushing it throws you into the carousel opening graphic.

In all, the program's performance is excellent, and it exercises children's shape-, color-, letter- and number-recognition skills in an amusing manner.

**EASE OF USE:** The program is utter simplicity to use, and my six-year-old ran into no problems. You simply boot the disk into any DOS 3.3 Apple system with at least 48K of memory. The carousel graphic turns on, followed by the menu.

I found the carousel musical rendition of "The Band Played On" to be most prophetic; since the Reset key is disabled, you cannot turn off the program. You've got the on/off switch to rescue you, however.

**ERROR HANDLING:** The program is well protected from errors. I make that statement after about 20 minutes of trying to make it fail. During that time it refused to behave improperly and stubbornly kept working regardless of all irrelevant and erroneous key presses I threw at it.

I made that test because somehow, some way, *my six-year-old* got the Counting Challenge to start sprinkling beautiful colored dots across the screen when it should have been paying attention to the arithmetic. My only conclusion is that even machines tend to drift off in class sometimes.

**DOCUMENTATION:** While the simple mimeographed, folded single sheet won't win any printer's production awards, the content is totally sufficient. The general program and its use is described along with its educational philosophy. It suggests that parents should lead children through all the games initially so they understand the goal of each one.

**SUPPORT:** Though I had no need on this occasion to contact Dynacomp about the program, I have always found the staff helpful and considerate in answering questions and correcting problems.

Appropriately for a children's program, you can copy the disk readily for backup supply by using the standard Apple COPYA program. If your youngster has yet to learn the importance of original diskettes, you can remove temptation!

**SUMMARY:** The program is a good, solid educational package that is fun for kids. It takes advantage of all the attractive features of a computer—color, sound and interactive play.

In comparison with Kiri's Hodge Podge, Dynacomp's last educational hit program, I can say this program has a few technical improvements and more for the starting-school-age children. (Hodge Podge has more games for the younger kids.) For my family, I am glad we have both. Now if only I could get the peanut butter off the keys.... ■



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Review of GRAFIX-ARTIST which appeared in the March 1984 issue of PERSONAL SOFTWARE magazine. Reprinted with permission. All rights reserved.

## GRAFIX-ARTIST

Designed to introduce a user of almost any age to computer graphics and programming, Graphix-Artist lets you create detailed color graphic pictures which can then be merged with other programs written in either BASIC or machine language. The package can also be used for general design layouts, creating advertising displays, or just letting your imagination run wild.

You can create graphics with Grafix-Artist by using a specially designed language or a joystick to control the on-screen capabilities. The use of the special language requires no previous programming experience, since all commands are simply explained both on-screen and in the accompanying reference manual.

Grafix-Artist's main menu offers you six options. The Introduction option will give you a good overview of what the program is all about, plus a glossary of terms and a list of all available commands. The glossary of terms and commands, as well as a description of what the six options are and what they can do, also appears in the small reference manual (Girone refers to it as a "reference card" because it's only five pages in length. He adds you may never need to use it, since any instruction you'll need appears on-screen).

The Demo option demonstrates the capabilities of Grafix-Artist with a continuous example of program applications. It also shows you how to create your own "demo" to reference later, either for yourself or to demonstrate to someone else.

Another option, Joystick Mode, lets you use a joystick to move the cursor in eight possible directions (the eight compass directions). The button on the joystick simulates a pen; when the button is depressed, the "pen" will "write" on the screen. You then use joystick commands for functions like draw, paint, clear, change colors, and change cursor movement speed. Typing H at any time will call up a Help screen to refresh your memory of the joystick commands.

In the Program Mode, you can create pictures with the special program language. All of the commands are full words and, as in the Joystick Mode, you can call up a Help screen to remind you of commands. Commands are straightforward: Clear clears the screen, Screen LBlue colors the screen light blue, Frame LGray colors the frame of the picture light gray, Speed 4 sets the cursor speed at 4, Color Red changes the pen color to red, Paint S 100 paints an area, and so on.

Once you've created a program and saved it on disk, the fifth option—Run a Program—lets you do just that. The final option, called Program to Picture Utility, allows you to save a particular picture—one that was first created in the Program Mode—in memory. It will also let you load that picture from within the Joystick Mode, and refine your program-designed screen.

Grafix-Artist makes use of 16 colors, and features editing and filing capabilities in addition to the picture control commands. A second package, Grafix-Printer, is also available for use with Grafix-Artist. Grafix-Printer is a high-resolution graphics printer-dump for use with printers and interfaces which emulate the Commodore 1525E printer.

Review of CHANCELLOR OF THE EXCHEQUER which appeared in ANALOG COMPUTING, June 1984. Reprinted with permission. All rights reserved.

## CHANCELLOR OF THE EXCHEQUER

**by Bob Curtin**

This review was supposed to be turned in a month ago, but I was so impressed with this program I wanted to do more than review the game on first impression.

Looking at the credits in the documentation I noted that the game was designed by R.C. Chiofolo, Ph.D. Mr. Chiofolo is a long time boardgamer and computer programmer who had, in the past, converted some (now defunct) SIMULATIONS PUBLICATIONS, INC. materials to computer. That experience sparked the inspiration for a design of his own, and COE is the result. The game is based on an historical situation in England in the early nineteenth century, at the beginning of the industrial revolution. Great Britain is divided into eight regions with varying resources, populations, money reserves, manufacturing capacity, and transportation nets. The objective of the game is "...to achieve top hole rating on the Analysis Program Graph. To do this you must merge all eight Regions with Great Britain, maximize population and machine utilization, and have at least 55,000 pounds sterling in the Exchequer by 1915." This is achieved through production of natural resources and crops, manufacturing of tools, factories, transportation, arms and consumer goods, and the allocation of these different resources in the eight regions for maximum effectiveness.

Interregional trade is of utmost importance, since most of the regions don't have balanced output of resources. The idea is to trade what you do have for that which you don't, manufacture the tools and machinery to make production more efficient, get rid of the excess population (by inducting them into the service or shipping them off to Australia) and building a transportation network to accomplish this.

Sounds simple enough. But there are a few flies in the ointment. For instance, labor strikes, bad

weather destroying crops and creating famine, civil unrest, and inflation all work to put you on the losing end of the stick.

Playing the game is easy. All input is through the keyboard, and illegal entries are not allowed. The game takes quite a bit of time to play, expecially when you're new to the system. You can save up to three games, or restart the historical game. Oh yes, those of you who own Epson printers can dump either individual region displays, or all regional displays, to a printer to obtain hard copies for analysis during the play of the game. It takes some hard mental gymnastics to eke out that last bit of efficiency and attain top hole ratings, and the hard copies are definitely needed.

You should also note that trading can take place anytime — before or after, but not during a particular stage. For those times when a little fine tuning is needed in a couple of regions for the next stage, this is invaluable.

The ANALYSIS program is one of the nicest features of the game, and of course the only way you can tell if you've "won" or not. Each of the regions can be analyzed for efficiency, as well as the national rating. This analysis is based on the degree of mechanization, population utilization, income, mergers, and the skill level you chose at the beginning of the game.

This game is definitely not for everyone. The physical playing of COE is very easy. The options are always displayed somewhere on the screen and are usually one-touch commands. The complexity of the game lies in the game itself. The manipulation of so many constantly changing variables, and the analyzing of the data is (at least for me) a mind bending experience. If you'd like a teenie insight into what it'd be like to head up an economic organization, buy COE. If you thrive on complex problems, buy COE. If you enjoy puzzles, buy COE. If you like chess, you'll probably like this game. If you're a Pac-Man freak, you'll probably hate it.

The Atari is capable of so much more than creating hoardes of galactic killers. Arcade games are a nice diversion and, admittedly, they make an enormous amount of money, but they are just so much intellectual pap. Chancellor of the Exchequer is a game which is not only intellectually stimulating, but a program which'll teach you something in the process. I'd like to see more programs on the market like this, perhaps simulating different business environments (management, corporate finance, stock market, *ad infinitum*) or other areas of human endeavor. I hope COE does well. □

## Review of
## CHANCELLOR OF THE EXCHEQUER

by Bob Cockroft

(This review appeared in ROM Magazine, March 1984
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Since the time I got my Atari computer back in 1981, I have noticed a large number of economic-strategy games on the market. The "run country" scenario has always fascinated me. So, in great anticipation, I bought or typed in these games, only to be disappointed by their simplicity. However, recently this has all changed. The reason is CHANCELLOR OF THE EXCHEQUER. This game is terrific, being infinitely better than other early attempts at an economic strategy game that I have seen.

CHANCELLOR OF THE EXCHEQUER places you in control of Britain at the beginning of the Industrial Revolution (1805). At this time your country has, for the most part, an agrarian economy, lacking many production facilities. It will be your goal to make Britain an industrial power. Success is determined by your rating for Great Britain on the Analysis Program Graph. High ratings are achieved by merging all eight regions with Great Britain, increasing population, maximizing machine utilization, and having at least 55,000 pounds sterling in the Exchequer by the game's end.

At the start of the game, Britain is divided into eight regions which have their own strengths and weaknesses. Each region has its own display screen with all vital statistics. As Chancellor, it is your job to distribute surplus resources so that all regions operate efficiently. To assist the player in using resources, an Analysis program is provided. This program will indicate how well you are employing your people and how industrialized a region has become. When a region becomes industrialized enough it will automatically merge with Great Britain. This will help to unite the economy and increase your rating.

CHANCELLOR OF THE EXCHEQUER's greatest strength is its ability to create a situation where one strategy is not the only realistic option. Different economic problems that the game produces can be corrected using many different methods. There is no built-in pattern that can be followed to insure success. Each game can be a different experience.

The game is structured so that it forces on experienced players to make decisions on a level higher than the "this or that" basis. The decision to produce either product 1 or product 2 does not end with production; it could have a rippling effect on the entire country's economy. For example, a player could be forced to make a decision to either produce goods or coal goods that could be sold abroad, the amount of money in the treasury will increase. There will be money for the many expenses. However, by selling consumer goods instead of making producer goods, one may be sacrificing growth for current prosperity. This is only a very simple illustration of what decisions must be made. Because it causes the player to be concerned with all the repercussions of his decisions, the "rippling effect" is one of the more interesting aspects of the game. Because this game is designed to promote many alternative strategies, one may find that it is a little complex at first. During my first game I quickly became lost in the many symbols that are used. In addition, the instruction pamphlet, although useful as an outline, does not clearly explain the mechanics of the game. Fortunately, CHANCELLOR OF THE EXCHEQUER comes with an additional program called "Help". This assistance program does a fair job of instructing the player how to play the game. The various screens and symbols are explained here.

Being an economic game, not a "shoot 'em up" arcade game, there are no dramatic graphic displays. However, the region statistic displays are made with some degree of creativity. Using modified character sets, the symbols graphically depict the information that is being presented. The overall display is fairly understandable, certainly for one who has gone through the "Help" program. Statistics from any or all regions can be printed out on Epson printers. The print-out is a summary, including the name of the region, date, economic statistics, and cost of various manufacturable items. It would be best to have the graphic chip for your printer, because without it some of the artistry cannot be printed. However, it is not essential; all important data can be printed from any Epson printer. Because CHANCELLOR OF THE EXCHEQUER is a well designed strategic simulation of the industrial revolution, it is a game that I would highly reccommend.

## MICROTEACH TEACHER'S AIDE FOR THE ATARI

by Mike Kinnamon

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Since I am a teacher, many educational programs are brought to me by well meaning computer users and salespeople, who believe that I can immediately put them to use in my classroom. Unfortunately, some of these programs do not lend themselves to practical classroom applications. They tend to be either too broad or repetitive, too much like drills.

*Microteach Teacher's Aide* (48K, two disk drives) is not in that category; it is a welcome solution to the problem of tailoring computer-assisted education.

With this program, a teacher with no knowledge of computer languages can create computer-based lessons that deal specifically with a particular curriculum. A teacher may write courses and assign them to individuals or groups of students, keeping a record of each student's progress readily available.

To use *Teacher's Aide*, you first format a blank diskette, using your standard Atari Disk Operating System. This becomes your courseware disk. Next, place the *Teacher's Aide* in drive number one and your newly created courseware disk into drive number two. Re-boot the entire system without BASIC; Optimized System Services' BASIC A+ is used by the program on disk number one.

The program's features are numerous and quite varied. Mastering its many modules will take several sessions, but the end result is well worth the time. A teacher can enter the edit mode and easily create a unit of study categorized into sections and chapters which coincide with the textbook being used in the classroom. You can re-edit an existing chapter or section for an alternate or improved use. You can dissect any individual chapter or section and create advanced or remedial editions of a given lesson. Each courseware diskette can be assigned a volume number, thereby creating an entire year's curriculum in any sequence and of any breadth.

Each TV screen is treated as a page of a textbook. The teacher has the options of color of pages and timed or untimed pages. The entire page, section, or chapter can be listed to the printer, giving the student a hard copy for study notes, homework, or tests.

**Flexible Options**

Questions may be presented to the student during or after each lesson. Several types of questions (multiple-choice, fill-in-the-blank, true-false, or yes-no) can be used in any order, in each lesson. Each question can be timed or untimed, and assigned a weighted point value at the teacher's discretion. If the student answers a question incorrectly, the teacher may assign a page, section, or chapter to be reviewed by the student in order to better assure a minimum competency of the lesson. A student's response thus determines the rate at which he or she progresses through the lesson.

The computer will keep a complete, detailed record of each student's performance. The teacher may review a student's status at any time and view the chapters, sections, and pages completed by each student. Scores on the questions are available with such details as number of times attempted before a correct answer was entered and the weighting value of each question. The teacher may list all students on a given disk, assign chapters to particular students, set up a new student file, or delete an old file by entering the report/review module of the program.

The editing commands are thorough, allowing the teacher to create new pages, edit old ones, insert or delete a page, and step forward or backward a page at a time.

Only graphics mode 0 (the standard text mode) can be used with this program, which is somewhat disappointing, but I know a few teachers who have spent the time to create high-resolution graphics to adorn the text. With a little imagination and creative endeavor, a teacher can use the keyboard graphics characters with pleasing results. Since each page is static, no animation of the graphics is possible. This prevents a dynamic presentation, which may limit the program's usefulness in primary classrooms.

The major advantage of *Teacher's Aide* is that absolutely no knowledge of programming or computer language is required. This is a real blessing for those teachers who have wanted to use computers in their curriculum but haven't had the time to become proficient programmers. Test and grade management, a major consumer of a teacher's time, is greatly simplified with this program. The validity of any test question can be determined in a matter of minutes, greatly improving a curriculum's instructional value and a test's ability to measure learning. I would highly recommend this program.

## Review of CHILDREN'S CARROUSEL

by Duane Sandul, Times Staff Writer

(Reprinted with permission. All rights reserved. April 14, 1984 edition. Computer Screening column.)

CHILDREN'S CARROUSEL, $19.95, Dynacomp, Inc., 1427 Monroe Avenue, Rochester, N.Y. 14618, for Apple and Apple compatible:

Nonreading children from 2 to 6 will love to run this musically motivated program. There are nine games designed for children to use on their own, but you will probably want to go through the games once with each child to be sure he understands what to do.

The object of the program is to teach various skills in a colorful and interesting manner. There are no scores kept and if any answer is wrong, only a buzz is given.

When the child answers correctly, a portion of the Carrousel Horse appears. When the correct number of horses (different for each game) are completed, the Carrousel turns and plays.

The skills taught are: alphabet recognition, co-ordination in the use of computer keys, shape recognition, shape comparison, shape differentiation, color differentiation, letter matching, and numbers.

Each game is unique. For the alphabet-recognition game the "Alphabet Song" is played, and with each note the appropriate letter appears. Then, in letter recognition and matching, the alphabet is presented in random order. Four letters appear on the screen, and the child is to press a key which matches any of these letters. The keys are supposed to be laser guns, and when the correct key is pressed the letter explodes, disappears, and is replaced by another.

Preschool children will find this an enjoyable way to learn, and parents will have bought a program that their children will be able to use without too much supervision.

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A photocopy of a review which appeared in INFOWORLD.

InfoWorld

# World Software Review

## *Kiri's Hodge-Podge, a children's program for the Apple*

*By Jay P. Lucas*

I found it. And it only costs $23.95 in disk version. If you have young kids, read on.

But lenter your spouse's name), a computer is educational. Think of the kids, how they'll learn from one, how it will intelligently entertain them and how it will patiently instruct them—in full color, with sound. After all, Sesame Street is only on for one hour a day.

Ah yes, you smile with recognition. Stock argument number 17 for getting a computer through the family budget committee. Suppose all the reasons and pleading win the day, and you purchase the computer.

You set it up, run it through its paces, do some elementary programming and start enjoying your new machine. Time passes too quickly, and suddenly you re facing the budget committee s quarterly review.

Where is the benefit you promised for the kids? You need a kiddie program, and fast. Sorry: Reality dooms you, for good children s programs are, in fact, few and far between.

I've been looking for a good one for more than a year. My kids are now five and two, so I need programs with big, bold, colorful pictures, with familiar tunes and sounds and with the simplest of operating instructions that do not require much, if any, reading. Excitement is essential to hold their attention, and there must be quick, visible and immediate responsiveness to any of the child s efforts to control or communicate.

A recent attempt by a major adventure programming house to address this preschool audience was such a dismal failure that I was able to receive a full refund from the store selling it.

I am happy to report, however, that the subject of this review, Kiri's Hodge-Podge, is everything I've been searching for, and an instant success in the family.

**InfoWorld**
**Software Report Card**

***Kiri's Hodge-Podge***

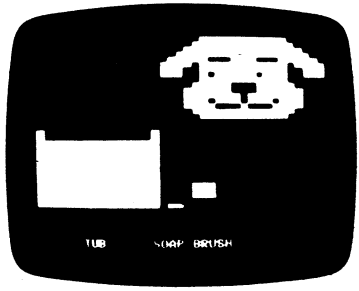
| | Poor | Fair | Good | Excellent |
|---|---|---|---|---|
| **Performance** | ☐ | ☐ | ☐ | ☑ |
| **Documentation** | ☐ | ☐ | ☐ | ☑ |
| **Ease of Use** | ☐ | ☐ | ☐ | ☑ |
| **Error Handling** | ☐ | ☐ | ☐ | ☑ |

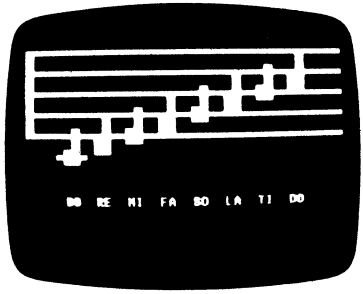
***System Requirements***

- Apple II or II Plus
- 48K RAM
- One disk drive or tape

Price: ***$19.95*** cassette, ***$23.95*** diskette

***Dynacomp, Inc.***
1427 Monroe Street
Rochester, NY 14618

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### Review of SERENDIPITY

by Duane Sandul, Times Staff Writer
(Reprinted with permission. All rights reserved.
April 21, 1984 edition. Computer Screening column.)

SERENDIPITY, $19.95, Dynacomp, Inc., 1427 Monroe Avenue, Rochester, N.Y. 14618, for Apple and Apple compatible:

This is a nine-game educational program for children. The alphabet, numbers, and colors are presented in an easy-to-understand manner that young children will quickly grasp.

The alphabet and numbers segments are geared to the pre-school child, while learning colors and a game of math invaders are for older children.

This is a comprehensive beginning educational program that offers a lot for a small price.

### Mini Review of GALACTIC BATTLES

This appeared in INFO-64, Winter 1983-1984.

"Some very unusual sound effects are featured in this game. Machine language gives this game speed and smooth scrolling animation. Basically the object is to shoot your way past various obstacles and last as long as you can. Difficulty increases as you advance through successive screens. Joystick required. We were quite pleased with the unusual graphics and sounds."

***Features and performance***

Kiri's Hodge-Podge is a collection of 50 or so quick little programs, each running in response to the pressing of one of the keys of the Apple's keyboard. Each program is a full-color action vignette, usually with sound, that describes some lesson associated with the key pushed. Most keys tell a complete story in themselves, but some keys are arranged as part of a group.

For example (going across the usual starting finger positions): *A* shows an apple; *S* shows a growing star (going nova?) with others in the background, while "Twinkle, Twinkle Little Star" plays from the speaker; *D* shows a dog animation with the dog about to get a bath and doing a quick disappearing act, all to music; *F* displays Old MacDonald's Farm, plays the familiar song and then displays an animal.

*J* shows the letter *J* jumping across the screen ending in the spelled-out word *jump*; *K* shows a picture of Kiri's koala bear; *L* shows Mary's lamb and sings the song; and the ;/+ key gives an introduction to addition using sticks and numerals.

The lowercase number keys provide music: each one is a note of the scale; the keyboard is effectively turned into a slow little organ. As each "note" is pushed, a treble clef on the screen displays the note in color and the name of the note is shown at the bottom.

Each small program is planned with care and is executed with attention to the way children behave. My son Zachariah favors the *Z* key, naturally, and may push it many times in a row. Each time the "zigzag" appears in a different place, and each leg is a different color.

Each time the *F* is pushed, Old MacDonald's farm shows a different farm animal. The *X*, which fills the screen with a large X-shaped kaleidoscope pattern, uses different colors each time it is pushed.

When you push the *N* (for "numbers") several times in a row, the number displayed is increased by one, and the incremental addition is illustrated by stacked blocks. The apple moves around the screen as the A is pushed time and again.

The drawings are done in low-resolution graphics, but are bold and beautiful. You don't need a color screen, but you lose much of the excitement when you view this program only in black and white. The tunes are about as good as the Apple oscillator can produce, which is not bad.

If you can judge the performance of this type of program by results, then it excels. The kids around the block ask for this program often, almost daily, and while my five-year-old commands the keyboard, my two-year-old watches in fascination. This can go on for half an hour per session, which is a long time for these fellows.

***Ease of use***

My copy of the program worked flawlessly from the start. I bought the disk version, which is written in DOS 3.2. To make it simpler to use the program in my DOS 3.3 machine, I used MUFFIN (an Apple utility) to make a working copy, as the documentation suggests. Running the program is as easy as 1-2-3: turn on the TV, put in the diskette and turn on the Apple.

The program comes in two languages, both on the disk: Integer BASIC and Applesoft. I have noticed no differences between the versions.

***Error handling***

The only way the young user can get in trouble is by hitting the escape or the reset buttons, and he should be warned to not touch them or the computer will stop. If he does push them, there is still no big problem—just enter RUN to restart the program. In every other respect, the program handles as you would expect it to.

***Documentation***

Even though the documentation consists of only a modest mimeographed sheet, it is totally acceptable. The first page gives a general description of the scenes in Kiri's Hodge-Podge and gives suggestions for using the program with both the parent and child, or the child alone.

The rest of the sheet is a description of all of the responses to the keyboard keys and the use of the clear key, Return. The documentation is short, but it says everything worth saying.

***Support***

I have had no need to contact Dynacomp about service, but I received the original order within four days of phoning it in. The program disk is not copy protected, but Marsha Meredith, the author/programmer, has done such a fine job of writing this program that I would consider it a nasty act to cheat her of her royalty.

***Summary***

Kiri's Hodge-Podge is written in a dense and sophisticated programming style, using all the features of the Apple. Although it is a professional product, I have the feeling that it was not originally written for money. It's just too "loving" a program. The author has really taken care to fascinate and educate the young user in every way possible.

In doing so, she has, in my opinion, set the standard to which all future preschool children's programs must aspire. ■

The response to DYNACOMP's HODGE PODGE was so great that we decided to add a sequel: CHILDREN'S CARROUSEL (described on page 19). CHILDREN'S CARROUSEL is also aimed at the 3- 7 year old group, and although it is similar in some ways to HODGE PODGE it is also much different.

# Maxi-Value From A Mini-Ledger

An efficient accounting program rides to the rescue of small businesses. It helps them in tracking and organizing expenses and saves the cost of a general-ledger program.

**BUSINESS**/SAM PERKINS

This review of MINI-LEDGER appeared in *PC* magazine, January 1984, and is reprinted here with permission. All rights reserved.

For owners of small businesses who would like to do bookkeeping on their microcomputers, there has traditionally been only one option—buying a large general-ledger program. But, for the small business, this option can be expensive. The large general-ledger programs often require a great deal of expensive hardware, particularly hard disks, which many small offices may not have.

To the rescue comes a program called *Mini-Ledger* (Version 1.8) from Paradigm Consultants, Inc., in Fremont, California. *Mini-Ledger*, as emphasized in the program manual, has no pretensions to being a full general-ledger program. It's designed to do two things:

- Organize your records in a format that will expedite your accountant's job.
- Track your expenses and income on a continuing basis to enable you to make intelligent decisions about your business.

*Mini-Ledger* initially presents you with a menu of over 30 different monitors from which to choose. If yours appears on the menu, a single keystroke, in most cases, will set up the program for your computer. Printer setup is similar.

Once the program has been set up, it is easy to use because it's straightforward and menu-oriented. The first step is to enter expenses and income. After each entry, the cursor moves automatically to the next position. Editing entries is accomplished with either control characters or the arrow keys.

### Chart of Accounts

When you are finished with the demonstration files and ready to begin setting up your chart of accounts, you may do so using a separate item on the program's main menu, or you can build the chart of accounts as you enter data.

You are allowed a total combination of 99 accounts and subaccounts. For example, if the number 1234 is an office supplies account, you can write subcodes such as 01-1234 to indicate a particular vendor with whom you do a lot of business. Your accountant need only be concerned that you have charged a certain sum to account 1234 because *Mini-Ledger* will total up expenditures by account number upon request. However, you can get data that will break out all information by subcodes, as well as by accounts.

You will most likely want to create a basic chart of accounts in consultation with your accountant. Once you've done so, adding such things as subcodes can quickly be done from the main input routines. You are not obliged to exit to another routine to add one item, which is one of the most appealing aspects of this program. Typically, the most tedious task associated with computing is inputting data. *Mini-Ledger*'s input screen is so thoughtful that working with the program is a pleasure. The next step after indicating that you wish to enter expense and income information is to assign the first file name for the system. You are allowed a total of 50 files in 1 year; for instance, you could create four files in the month of January, four in the month of February, and so on, with two left over.

The next step is to key in the date, which is automatically formatted for you, and then indicate one of four transaction types by pressing D(eposit), P(ayment), V(oid), and C(redit), respectively.

### Checking Your Checks

The cursor then automatically moves to the check number column. If you are working with sequentially numbered checks, and you press the Return key, the program will automatically increment the check number by one. If you enter a check number that is out of sequence with the one that immediately precedes it, the program will bring this to your attention but will not force you to back up—a clever device to keep you from losing track.

The program calls for a description of the transaction up to 20 characters long, followed by the subcode and a main code. When you enter the codes, the name of the account appears at the top of the screen as a verification of your entry. If you enter a code–subcode combination that is not on the chart of accounts, the program will ask if you want to use the code anyway. If you do, it then asks you if you wish to place it in the chart of accounts. Normally, you will answer yes, in which case the program asks you for a 35-character description of the item for the chart. Once you've taken care of this housekeeping, you make your final entry, a dollar figure. Incidentally, pressing the Tab key will duplicate items entered on the line immediately above, which saves typing of repeated entries.

At any time you can move the cursor up and down on the screen. The screen will automatically reformat itself for you. You can backtrack and insert an entry that you might have overlooked, while the program continuously updates your running balance, shown on the right edge of the screen.

### Output

*Mini-Ledger* provides data for both the business executive and the accountant. It offers a running report of the entries as they were entered on the screen—unsorted and in the original order. It can print from the first file in the system to the last or pick any group of files in between. Fiscal year users can go "backwards," starting with October and ending in April. In addition, an elegant sort-and-accumulate routine lets you pick any group of files that you wish, sort them chronologically, total all the codes and/or subcodes (if you wish), and print them out as a report.

Incidentally, all the printouts that *Mini-Ledger* generates can be transferred to a disk file where they can be read by any word processor capable of reading a simple ASCII file. This permits a user to read the files and lift out information for letters or financial reports he is composing.

In addition, the program will furnish an alphabetized or numerically sorted chart of accounts and will accumulate the totals for the chart of accounts for any period of time you specify. In other words, you can print a quarterly report that will total all items by chart-of-account numbers or by the subcode numbers. This option is valuable for the accountant, who may be using his own computer at this point and may need some control figures in order to make comparisons with his office computer.

*Mini-Ledger* also generates a year-to-date report in matrix form of all codes and provides the dollar figures associated with them.

### Error Handling

*Mini-Ledger* has excellent error-catching capabilities. I was unable to make an entry that fouled up the system. The program rejects invalid dates such as 12/32/84. If you try to give it a transaction code other than the four it will accept, it gives you an error message explaining what it requires. If you have a habit of typing the letter *l* instead of the number 1, it will beep at you.

After several warnings, the program will let you put in an account number that is not on the chart of accounts, but the dollar amount will be assigned to UNCODED on the printouts at a later time. The entry will be shown to you separately on the printout and, in case it was a mistake, you can go back and correct it.

*Mini-Ledger* does not have the ability to instruct the computer to write the checks, but I didn't find this feature particularly useful. My experience as a consultant has taught me that once the novelty of having the computer write the checks has worn off, most small businesses go back to writing them by hand. If the business is large enough to justify the complications of computer-generated checks, it is probably too large to use *Mini-Ledger*.

Another feature this program lacks is the ability to generate true profit-and-loss and financial statements. The printouts it generates are adequate enough to give you an excellent overview of your financial operation. And, if you want more complex statements, you will have to go to your accountant anyway.

Nonetheless, *Mini-Ledger* is a fine program. It is easy to use, and its input method makes it nearly impossible for the program to choke on data. And giving the user the option of adding new chart-of-account codes on the fly is a particularly practical feature. *Mini-Ledger*'s authors must have watched people work. ■

## THE ODDSMAKER

(*MICRO*, June, 1984)

Product Name: **The Oddsmaker**
Equip. Req'd: Commodore 64 or
Apple II
Disk
Printer optional

**Description:** This program could be called "The Electronic Bookie", for that is exactly its function! Through an easy-to-use menu-driven system you take bets on some activity, calculate and display the para-mutual odds, display the amount bet on each team/horse/fighter, print tickets for each bet, and when the contest is over, display the pay-offs for each bet. Additional features include automatically taking a 'house cut' percentage from each bet and saving the betting data to disk. The program is so complete that the creators hope they do not get in trouble with 'you-know-who'!

**Pluses:** Easy to use by anyone. Provides a good understanding of the para-mutual betting process — quite educational. The printed tickets feature makes the package really useful (for fun only, of course!).

**Minuses:** Perhaps overpriced at $44.95.

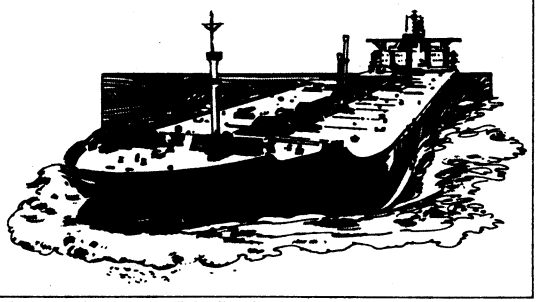
**Documentation:** The twenty page booklet is clearly written and easy to use.

**Skill level:** Can be used by anyone

**Reviewer:** Robert M. Tripp

# Valdez: A Supertanker Simulation

*Mike Kohlrust*



**creative computing SOFTWARE PROFILE**

**Name:** Valdez

**Type:** Supertanker

**System:** 16K Apple, PET, Northstar, TRS-80, CP/M, 24K Atari

**Format:** Disk and Cassette

**Language:** Basic

**Summary:** Excellent

**Price:** $19.95 Cass.; $23.95 Disk

**Manufacturer:**

Dynacomp, Inc.
1427 Monroe Avenue
Rochester, NY 14618

To me, a simulation is valuable, in direct proportion to its ability to mirror the world. In a wider sense, games, such as the fantasies that are widely available, are also simulations, but their primary purpose is as games. I feel that the main purpose of a simulation is to tell or teach me something about the real world. If there is fun to be had in the process, so much the better. Valdez succeeds on both accounts.

The object of Valdez is to navigate a supertanker from the North Pacific approximately 100 km. into the port of Valdez, Alaska. All of the important characteristics of a 300,000 ton supertanker have been accurately programmed into the simulation. In addition, a 64,000 point bit map is included.

All navigation must be done in relation to this map. This sounds easy. After all, all you have to do is tell the tanker when to turn and when to stop, right? Wrong! When I said that all of the characteristics of the tanker had been simulated I meant just that. Turning an object which weighs over 300,000 tons isn't done on a dime; neither is stopping or accelerating it. Momentum is one of the most important factors to be considered in the operation of this type of ship.

Once you have learned to control the ship through helm and engine commands, you must guide it through narrow passes into Valdez harbor. Once again this isn't as easy as it sounds for the computer is sailing other ships downstream from Valdez into the North Pacific. If you manage to dodge all of these ships, and there can be up to a dozen on the screen at any given time, you must then dodge the icebergs generated by the Columbia Glacier.

As if this isn't enough, you must take into account the tides in the area, which are quite strong and varied, and can have strange effects on your course.

Once you have made it into Valdez you must dock with the floating unloading station by bringing the ship to a dead stop with an accuracy of a few meters. As I said, it isn't as easy as it sounds!

The feel of the simulation is one of accuracy and authenticity. Never having piloted a real supertanker, I can't swear to that, but shortly before purchasing this simulation I read "Supership!" by Noel Mosterat, and the problems he discusses in the book all show up in the simulation—including the unreliable power plants!

It is obvious that someone has put a great deal of time and effort into Valdez and that it has paid off. On the whole, the results of interacting with this simulation have been an increased appreciation of the difficulties involved in operating this type of ship and several burned dinners as I have put off turning the hamburgers while trying "just one more round."

All of this isn't to say that the simulation is perfect. After all, no program is. There are several minor problems. The first is that the "play value" of the simulation has been somewhat neglected. For instance, there is no scenario at the beginning to set the scene. In addition the Apple II version that I have makes no use of the strong points of the Apple such as its sound and graphic capabilities. This is common with programs that have been developed for one system and translated into others. Apparently Valdez was developed on a Northstar system and translated to most others.

However, one of the nicest things about this program is that it can easily be modified to achieve the exact feel you want. Moving the opening down a few lines leaves room for a nice scenario and sound is easily added, even by a novice Applesoft programmer like me. Modifying the For/Next loops in lines 149 and 157, for example, can produce any radar effect that you want. My program has been modified to include both sound and variable radar scans, which make the simulation much more enjoyable for me. The only problem is that the wider scans take quite a while to display. I'm surprised that a short machine language program hasn't been incorporated here to speed up the display generation.

All in all Valdez is an excellent simulation and one of the few in this class that is available for all popular computers and on cassette. The best thing I can say about it is that it is exactly what I expected to be able to do when I bought my Apple a few months ago. I hope to see more such programs in the future—especially in cassette form. □



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**Review of BRIDGE MASTER**
**A.C.E., January, 1983**

## BRIDGE MASTER

This program is available on disk for $29.95 from **DYNACOMP**, 1427 Monroe Avenue., Rochester, NY 14618. It is an upgrade of their former Bridge 2.0. If you own the original, you may obtain the upgrade by sending them your original cassette or disk, together with $5 plus $2 handling. They were VERY prompt. I received the disk in what seemed less time than was required for my order to reach NY. I also sent off two pages of questions, and they were also very prompt with responses to the questions. Most of my problems with the program was due to my lack of understanding about Duplicate Bridge. I've never played Duplicate. The documentation tells you the program generates hands numbered from '0-999'. A numbered hand produces the same card distribution each time you select it. You may play the same hand as many times as desired. You may also switch positions in the same hand, and see how you may do on the other side. The documentation also tells you the '0' hand produces a random hand each time you select 0. I didn't find that to be true, and asked Dynacomp where the random hand could be found. Their response showed me the hands were actually numbered from 0.00 to 999.99. That's 100,000 hands, instead of 1000. Who needs another random hand generator? I hope I live long enough to play 100,000 hands (not likely!). The program keeps score and saves it to a disk file so you can come back to it any time. The menu lets you display the last hand played. So if you're playing the numbered hands sequentially, it's easy to pick up where you left off. There are no graphics – it's all text. With all the scoring and reading and writing to disk it seems slower than the 2.0 version it replaces. It has added some functions not covered by the 2.0. They've added pre-emptive openings, Blackwood and Stayman conventions. The program will also recognize demand bids and jump-shift responses. These are all nice improvements. Dynacomp says "sometimes it makes dumb plays!" I can second that! It makes them by your partner, as well as by your opponents, so maybe it evens out. Little things like trumping one's own high card, setting up an opponent's loser. The program makes you look like a very good Bridge player – you can win a lot. It's good practice for someone wanting to learn to play. I think I'm a pretty good player, and I'm having fun with it.

– Jim Bumpas

**Did you know . . . . ?**

In the March 1983 issue of SOFTLINE, the following DYNACOMP programs received first place votes: FROG MASTER, PERSONAL FINANCE SYSTEM, SUBMARINE COMMANDER and VALLEY OF THE KINGS.

**BRIDGEMASTER DOES IT AGAIN!**

The BOOK OF ATARI SOFTWARE (1983 edition) gave DYNACOMP's BRIDGEMASTER an "A" for overall value for the dollar. We must be doing something right: they gave PACMAN and SPACE INVADERS a "C".

## REVIEW OF HANGMAN

George Earl's hangmen play the traditional game, except that they tell you right out what's to go in the blanks—in another language. *C'est une bagatelle mais je vous l'offre avec amour* is what you're to put in _ _ _

## HSD STATS PLUS

(Reprint of a review appearing in PSMR, Issue 3
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STATS PLUS is the successor to HSD STATS, which was reviewed in Issue 2 of the PSMR. The new version is a great improvement and places STATS PLUS as the leading candidate for software purchase by social science departments interested in acquiring statistical packages, particularly since it costs one-tenth the price of STATPRO. STATS PLUS works with the Apple II and IIe, the Apple III, and the Franklin Ace. It comes with a free back-up disk (the disks are protected).

STATS PLUS has numerous strong features. A leading feature, not matched by any other package, is its ability to produce up to 5-way crosstabs. It is not constrained by the Apple's memory but will handle as many cases as fit on the disk (this depends on the record length; a file with 10 variables, each 1 digit long, would allow about 3,200 cases). Also, STATS PLUS will interface to other HSD products.

Even without the companion programs, STATS PLUS provides most of the elements needed for social science research and instruction.

The Descriptive Statistics option provides sample size, sum, standard deviation, minimum, and maximum on up to 600 data points per file, allowing processing of up to eight files per run.

The Frequency Distribution option gives sample size, minimum, maximum, count, cumulative count, percent, cumulative percent, mean, standard deviation, and 10th, 25th, 50th, 75th, and 90th percentile values. A saveable bar graph or frequency polygon graphic is also available. A limit is that frequency data must be based on variables which are or have been converted to integer form. Variables can have up to 15 value categories.

The Correlation option gives sample size, mean, standard deviation, and the correlation matrix.

The Linear Regression option gives the simple (two-variable) regression equation, the significance of the b coefficient (t-test), observed, predicted, and residual determination, the standard error, and a high-resolution scatterplot.

The Multiple Regression option allows two independent variables, and gives the equation, the mean, standard deviation, partial R, multiple R and R-square, the analysis of variance table with F values, and standard errors of b. Regression with a larger number of independent variables requires purchase of one of the other HSD regression packages (data files among HSD products are compatible).

The T-Test option gives the value, probability level, and point-biserial correlation. This option is limited to 500 cases.

The ANOVA option provides for one or two factor designs. More complex forms of ANOVA are available on the two supplementary HSD ANOVA packages. HSD ANOVA II provides a higher level ANOVA than available on any other package.

The Nonparametric Tests option gives the Mann Whitney U, Wilcoxon Signed Ranks, Kruskal-Wallis, Spearman rho, Kendall tau, and Friedman ANOVA by ranks measures. In each of these sub-options, intermediate statistics are output as well.

The Crosstabs options allows up to 5-way crosstabs on up to 9 by 9 tables (200 categories maximum). Continuous variables can be coded for crosstabs from within this option. The table generated gives the count and the cell percentage of the total. Associated statistics are the sample size, sum, mean, standard deviations, minima, and maxima. One-way tables are also possible, giving frequencies on a given variable for all cases or just for cases selected on up to five criterion variables.

There is also a Contingency Tables option, which gives further table-related statistics. This can also be used to generate statistics if the user has the cell entries from another source, such as an article or book, or from the Crosstabs option above. The statistics given are the Fisher Exact Test and Chi-Square. Chi-Square tests can also be performed for observed and expected frequencies of a single variable with up to 10 cagegories.

In addition to the statistical options, STATS PLUS comes with a good data editor allowing data entry, editing, case selection, missing-data handling, file merger, creation of subfiles, and printing of files. It also provides arithmetic, exponential, log, and rank conversions on one's data. Files may be written in random-access form for ease of search/ select and missing-data handling, or in sequential files for disk space conservation. While most procedures support either type of file, the Crosstabs option requires random access while ANOVA requires sequential files. This is an inconvenience, though a utility is provided allowing random-access files to be converted to sequential and vice-versa.

All in all, STATS PLUS is a user-friendly program which stands out from the others. It comes at a reasonable price and can output nearly all the statistics most applications require. Its 96-page manual is clear and the technical support on the phone has been excellent. In the critical area of multivariate analysis of tables, it surpasses any other program and is probably the best all-round choice for political scientists.

## John Dvorak's Comments on THE ODDSMAKER

(Reprinted from INFOWORLD, April 23, 1984)

This package runs on Apple IIs and IIIs. It's a genuine pari-mutual betting system that allows the user to set up a real betting pool. It prints tickets, calculates pari-mutual odds, and takes a house percentage.

Although it is said to be for amusement only (hah!), it is suggested that the next time you have a dozen or so people over to watch a fight, horse race, or football game, you might use the program for some friendly wagering. You can use the house cut (which is programmable) to buy the beer and chips for the gang.

## A New-product Review of FLIPSKETCH

(Antic, June 1984. Reprinted with permission.
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**FLIPSKETCH**
(graphics utility)
Dynacomp, Inc.
1427 Monroe Avenue
Rochester, N.Y. 14618
(800) 828-6772
In NY — (716) 442-8960
16K — cassette — $19.95
24K — diskette — $23.95

FLIPSKETCH combines a powerful drawing program with impressive animation features to let you animate your drawings. Its low-resolution graphics allow you to create as many screens as possible (up to 56 screens with 40K). These screens include one background frame. You use a joystick to design each frame, choosing from up to 24 different colors. You can animate your work in one of two ways: sequential animation (each screen is displayed in the order in which it was created) or programmed animation (screens are displayed in any order you desire). Drawings can be saved on disk or cassette.

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## Blackjack Coach

**Manufacturer:** Dynacomp

**Equipment Requirements**
Color or Monochrome Display: monochrome
Memory: 48K
Keyboard or Joystick: keyboard
Printer: optional
Disk Drives: one

**Instructions:** 29 pp.

**Word or Graphics:** mostly text

**Backup Procedures:** disk is copyable

**Suggested Age Level:** adult

**Continuing Interest:** yes

**Price:** $33.95

**Ad Reliability and Packaging:** good

**Comments:**

Although this monochrome program is extremely simple from a visual point of view, serious blackjack devotees might find it well worth the investment.

One or two players can choose from several different playing modes that provide varying levels of help in placing bets and making card decisions. At the manual level, you're on your own completely. If you choose to be coached, you'll still input your bets and card-playing choices, but the computer will occasionally intercede with advice, which you can heed or ignore. In the most helpful level, the computer figures your bets and plays your cards, letting you sit back and study its decisions without having to type in any input whatsoever.

Blackjack Coach also provides a broad variety of other options within the framework of the choices mentioned above, allowing you to tailor your play to the rules of any specific casino. At the end of a specified amount of play, the program will also provide statistics of the game, which you may print out on your printer or simply study on the screen.

Anyone wanting to play blackjack simply for a little light diversion would probably prefer to have a more graphics-oriented program than this one. The purpose of Blackjack Coach, it seems, is not so much to entertain as to instruct serious players in the techniques and finer points of the game.

## Poker Party

**Category:** Draw poker simulation

**Manufacturer:** Dynacomp

**Equipment Requirements**
Color or Monochrome Display: monochrome
Memory: 16K
Keyboard or Joystick: keyboard
Disk Drives: one

**Instructions:** 6-page booklet

**Word or Graphics:** text only

**Backup Procedures:** disk is copyable

**Suggested Age Level:** 12 up

**Continuing Interest:** yes

**Price:** $23.95

**Ad Reliability and Packaging:** good

**Comments:**

I had mixed feelings about this one from the start. My main problem concerned playing with cards that are designated merely by letter and numbers. For instance, my first hand looked like this: 2D 9C TC KH JK. I've always found that sort of thing slightly inconvenient in a game, and this program did little to change my mind.

However, despite its stark monochrome simplicity, Poker Party does have a lot going for it.

You're playing against six computer-controlled opponents in this one, and I have to admit that Art, Bev, Oscar and all the others are no slouches when it comes to serious jacks-or-better draw poker.

The game is organized in such a way that you can insert it in the computer and start playing almost immediately. There are no options to select, but you may want to glance over the instruction booklet at some point to learn about a few of the game's subtleties.

During play, the program determines the amount of your bets and keeps track of your total winnings or losses. (It even tips the barmaid for you occasionally.) All a player has to do is decide whether to fold, bet, raise, pass, etc., and to keep an eye on what the other six players are up to.

Poker Party moves fairly quickly, considering the amount of work it has to do, and I have no complaints whatsoever about the way the game plays. But still, it sure would have been nice to see real cards somewhere on the screen.

## Starbase 3.2

**Category:** Space adventure

**Manufacturer:** Dynacomp

**Equipment Requirements**
Color or Monochrome Display: 40-column monochrome
Memory: 64K
Keyboard or Joystick: keyboard
Disk Drives: one

**Instructions:** 9-page booklet

**Word or Graphics:** text and simple graphics

**Backup Procedures:** disk is copyable

**Suggested Age Level:** 10 up

**Continuing Interest:** yes

**Price:** $17.95

**Ad Reliability and Packaging:** good

**Comments:**

This game has been around in one form or another for a number of years, and the reason why is clear. Although simple, Starbase 3.2 can be a highly challenging and enjoyable space adventure.

The game plays on only 40 columns of your monochrome display and there are no flashy graphics, but I think you'll find as I did that you don't need them to get involved in playing Starbase 3.2.

The game is played on an eight-by-eight grid with only one quadrant of the grid visible on the screen at any time. You are captain of the Invincible, the most powerful star ship in the Confederation fleet, and your mission is to stop an invading horde of Cryolin warships. You must travel from quadrant to quadrant about the grid, destroying the entire enemy fleet one warship at a time.

Also scattered about the grid are Confederation star bases that are available to refuel and resupply the Invincible, and occasionally you must defend them against Cryolin attack.

The various warships and bases you must deal with are represented by letters and symbols on the screen, and most of the information comes and goes in a text form. By inputing a random seed number at the start of play, you insure that the layout of every game is different.

The single letter and number commands that you enter allow you to fire lasers and photon torpedoes, move about the grid, recharge your shields, scan adjacent quadrants, etc. The program is quick and seemingly free of annoying errors.

Working out game strategies and paying close attention to detail are the keys to success in Starbase 3.2. If you can live without color and graphics for a while, then you'll probably find this moderately priced game very enjoyable.

(I was able to play a full screen, 40-column version of this game on my color monitor by using the following procedure: Boot up with DOS 2.0, enter the MODE,,,040 command; enter BASIC; enter RUN"STARBASE". All the necessary DOS and game files are easily copied onto a single diskette. The game still plays only a simple monochrome version, but the display is twice as large on the screen.)

Here is how *80 MICRO* (August 1984) rated DYNACOMP's COMPU-OPOLY and Tandy's "Monty Plays Monoploy. See the review in that issue.

**Monty Plays Monopoly**

★ ★

Tandy/Radio Shack
One Tandy Center
Fort Worth, TX 76102
#26-1952
Model III, 32K RAM
One disk drive
$34.95

| | |
|---|---|
| *Good graphics?* | ★★★★☆ |
| *Good docs?* | ★★★★☆ |
| *Fast?* | ★★★☆☆ |
| *Challenging?* | ★★☆☆☆ |

| | |
|---|---|
| *Good graphics?* | ★★★☆☆ |
| *Good docs?* | ★★★★☆ |
| *Fast?* | ★★☆☆☆ |
| *Challenging?* | ★★★★☆ |

**Compu-Opoly**

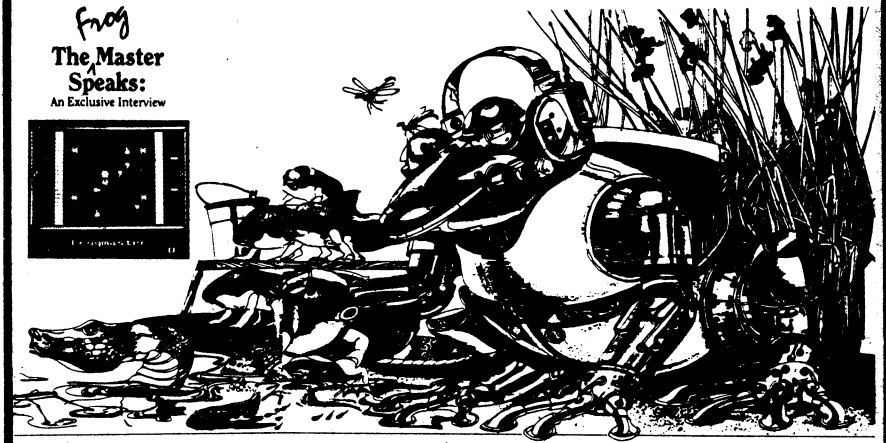
★ ★ ★ ☆

Dynacomp Inc.
1427 Monroe Ave.
Rochester, NY 14618
Model III, 16K
$19.95 cassette
$23.95 disk

# Frog The Master Speaks:

## An Exclusive Interview





When I finally tracked down Newt Frogknee, possibly the most formidable Frogmaster coach and trainer ever to guide a team of tadpoles, he initially declined to give me an interview. I had tracked down the legendary coach in the muck and slime of a swamp in the bayou that would have made the Johnstown flood look like a goldfish pond. He made some threatening gestures toward me; he apparently felt I was a rival coach who had followed him there on a scouting mission trying to lure away his best-looking recruits. I tried to convince him that nothing could have been further from the truth, that I was a sports writer after an interview. But the gruff coach, in a display of that famous temper of his, smacked me in the face with a handful of mud.

Muddied but unbowed, I was still determined to get my story. After all, this was the man who had guided a team of young, untested tadpoles and over-the-hill frogs, molding them into an almost unbeatable machine. Under his tutelage, they were not just a bunch of amphibians; they were an awesome example of the height of coaching genius, the whole being greater than the sum of the parts. This was the earmark of a Frogknee team, the willingness to sacrifice individual talents, even one's life and baby tadpoles, for the team and coach. The story had been repeated several times, with different casts of characters, but always with the same end result: victory. His teams had competed in (and usually won) all the major bowl games: the Turtle Bowl, the Goldfish Bowl, the Weevil Bowl, the Dust Bowl—all the biggies.

The man was truly a great one. Unfortunately, he was also a stubborn one. Not only was he refusing to talk to me, but he was also directing many strong young frogs to use me as a tackling dummy (a task they attacked with great zeal).

I had given up hope of ever getting my interview and was retreating when I felt a pull at my side. It seems that a hungry alligator had decided to fix himself a snack of spare ribs, and was searching for mine. The great coach saw this, and after one of his famous gaffaws, consented to do this interview. As we spoke in the back of the ambulance that rushed me to intensive care, Newt remarked, "Kid, you got guts. But they're leakin' out yer side." The coach enjoyed another great laugh at my expense, but I stopped his sick sense of humor short by bleeding on his pant leg. We then began the interview that cost me 28 stitches in my side and a huge dry cleaning bill.

**Me:** Coach, how exactly do you do it? You are one of the all-time great Frogmaster coaches; your teams are routinely spectacular. What's your secret?

**Coach:** There is no secret. It's a matter of rewarding your players when they deserve it. You'll never see me rewarding a tadpole or frog who doesn't deserve it! On the other hand, I'll seldom miss a reward when a frog is moving in the right direction. The right rewards mean the right moves. That's a good guideline for any coach.

**Me:** Your players haven't made many mistakes over the years.

**Coach:** Oh, I've had my share of screw-ups. Sometimes you get a tadpole that gets out there and just doesn't know which way to go, and he catches encouragement from the other coach and decides to try and score AGAINST you! I remember a game when I was just starting out coaching where the opposing coach rewarded my players so well that the entire contest consisted of all the players, even mine, storming my goal line. My poor snake goalie quit right after that game, and I didn't blame him one bit!

**Me:** Of course, things have changed since then. You're more than likely to do that to an inexperienced opponent now. A question I've always wanted to ask you: How do you manage to stay so sharp? You always seem to be so well-prepared for your opponent. How is that?

**Coach:** Practice, practice, and more practice. I practice my team against a team controlled by a computer, with a handicap, at different speeds, with different numbers of players. If you can beat the computer's team, you're a damn fine coach. Not to blow my own horn, but I can take the computer three out of five. This keeps me ready for any challenge posed by another coach.

**Me:** You mentioned the number of players. How many players do you prefer to use?

**Coach:** I always say "the more the merrier". When there's nine players on each side, that creates a situation where your coaching skills are really tested. You must try to pay attention to 18 frogs or tadpoles, and effectively reward the right ones at the right time. This is tough for many inexperienced coaches, but challenges are made to be met and conquered. Make sure you get that quote right, 'cause it's one of my better ones.

**Me:** That's one of your BETTER ones? (The coach shot me a nasty glance, and I hurried up with my next question.)

**Me:** What level do you most like your players to compete at?

**Coach:** I personally will usually have them play either the standard or advanced game. I left the practice game, when each team only has one frog, behind years ago. It was useful for me to develop my coaching skills, but I need the challenge of the STANDARD and ADVANCED games. I particularly like the advanced game with the walls that the tadpoles have to break through and the frogs have to leap over to score. It gives me a great pride in my players when I see them bash into a brick wall in an attempt to break a hole in it for the good of the team. I think the walls provide an additional challenge, and you know, how I feel about challenges.

**Me:** They're to be kept and monitored . . . ?

**Coach:** Idiot! Met and conquered! Another challenge I like is Metamorphosis, when tadpoles turn into frogs. frogs lay eggs, eggs become tadpoles, and frogs die during the course of play. The biggest heartbreak is when you get a tadpole that just hatched from an egg to march downfield, approaching the opponent's goal line as it changes into a frog, only to have it die on you before it scores.

But I'll tell you honestly, I have nothing but the greatest respect for a frog that gives its all for the good of the team.

**Me:** Coach, in your day, you've coached some of the best goalies in the game. Do you have a special touch when it comes to controlling your snake goaltenders?

**Coach:** That's a pretty good question. You're smarter than you look. As a matter of fact, since a coach has better control over the goalie than over the frogs and tadpoles, I can better use my reflexes and concentration to make my goalie more effective. Another factor in the success of my goalie, and the overall effectiveness of my team, is a good feel for the probability of a frog's next move. It's possible to "track" a player, keeping abreast of the probabilities for his next move in any direction. This can be a great help in defending against the opponent and also guiding your offense. Of course, it is a great challenge even if you've mastered the probabilities . . . (The coach was obviously waiting for me to spit out his quote about challenges. Due to loss of blood or just that I didn't think it was a very good quote, I wasn't sure if I remembered it. I gave it my best shot.)

**Me:** Challenges are made to be . . . meta-containers?

The coach could not contain himself at being misquoted again on his favorite quote, and showed a flash of his legendary temper by breaking off the interview (as well as my ankle) by slugging me in the foot with an oxygen tank. I had finally gotten my story, and lapsed happily into unconsciousness. Unfortunately, this will be my last article for some time, since I'll be laid up in the hospital while my ankle and side heal. The doctors do assure me, however, that I will be out of the hospital in time to cover the Dust Bowl. Who knows? Maybe I'll even get to do a follow-up interview. Let's see now. Challenges are made to be

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**BOOK REVIEW**

# Basic Scientific Subroutines Volume I, Volume II

Review by Bruce Powel Douglass
Dept of Physiology
School of Medicine
USD Medical School
Vermillion, SD 57069

BYTE BOOKS, a division of McGraw-Hill, has introduced a new series by F.R. Ruckdeschel on scientific and engineering methods in Basic for microcomputers. Dr. Ruckdeschel, well-known to BYTE readers, has written many excellent articles on scientific subroutines in Basic. He is currently employed as a scientist at the Dynacomp Corporation, which publishes a large selection of computer software, much of which is scientifically oriented. Incidently, the programs for volumes I and II are available on disk from Dynacomp. That will save someone a lot of typing!

**Volume I**

The first volume is about 300 pages of numerical analysis techniques and appropriate subroutines, including:

1. plotting subroutines
2. complex variables
3. vector and matrix operations
4. random number generators
5. basic series approximations.

On the whole, the algorithms used are good and the topics are explained satisfactorily for the average user. The few exceptions that I found will be noted shortly. The routines are listed in two dialects of Basic: Northstar and Microsoft, both in annotated and condensed form. This is a helpful feature of the book in that it is easy to read and follow the logic of the routines, but when it is time to type in and save all that precious memory you needn't worry about adjusting line numbers when REM statements and lines are deleted.

The plotting routines are useful if your microcomputer does not already have built-in graphics capabilities. All the plotting routines developed here use byte resolution and plot "*" on the screen or printer.

Complex variables are covered in a whole chapter, but Dr. Ruckdeschel is rather insistent on the conversion of rectilinear complex numbers into polar complex numbers. The reason is obvious; it is easier to perform multiplication, division and more complicated mathematics on complex numbers in their polar format. However, if you are using these routines to solve for all *complex roots of a polynomial equation*, with order reduction by synthetic division, or some other iterative method that has a large roundoff error component, you should be aware that more roundoff error will be added to your procedure. The reason for this is the constant change from rectilinear to polar, followed by the multiplication or division, followed by the conversion back to rectilinear coordinates. This is especially true of the TRS-80 (my own dear machine) in which the transcendental functions are single precision. You will be limited to single precision on any machine that lacks double precision for its transcendental functions.

The chapter on vector and matrix operations is one of the best in the book. The demonstration programs perform vector additon, subtraction, cross products, dot products, norm and angle (vectors), and matrix addition, subtraction, multiplication, division, inversion, clearing, determinants, eigenvalues, exponentiation, and solving simultaneous equations. While none of these routines is especially difficult for someone who understands the mathematics involved, the time saved in having them all in one place when you need them is worth the price of the book.

A problem with the vector and matrix chapter is the use of cofactor reductions for the calculation of determinants. While this method does indeed work, it is size dependent, and can be a real pain to program. It is my opinion that the use of the Gauss-Jordon eliminaton method to form an upper triangular matrix and then summing the diagonal elements is much superior for numerical computation. This method is easier to program and is not size-dependent. The cofactor reduction method is better in certain instances, such as in matrix operations performed in symbolic manipulation languages, such as LISP, RLISP, or MUSIMP. Since this is a book on Basic subroutines, I think that the upper triangular method ought to be used instead.

In my judgement, linear programming methods might have been introduced here with great effectiveness. The Simplex algorithm lends itself well to matrix computation, but I guess everything can't be included.

I rarely have had a need to generate anything other than white noise and Gaussian distributions, but the chapter on number generators is complete. You have routines to generate; normal, linear, Poisson, binomial, exponential, Fermi, Cauchy, gamma, beta, and Weibull distributions. I wondered why Chi-square and F ratio distributions were not given as well, since those were things that I have actually used. The Chi-square distribution is found in Volume II and the F ratio must be one of those waiting in the wings for Volume III.

The last and best chapter, in my opinion, is on series approximations. Primarily, the only expansions discussed are *Taylor series*, but some more optimal series expansions are lifted from Hasting's **Approximations for Digital Computers** and Abramowitz and Stegun's **Handbook of Mathematical Functions**. Several series expansions are explicitaly given, with their coefficients, error bounds, and radii of convergence. Routines to approximate these functions are given, again, in two dialects of Basic.

The diskettes for Volume I contain menu-driven programs and may be useful. They are a bit expensive as a group, so I recommend buying the book and then choosing the diskette(s) or cassette(s) you need. Disk #1 contains chapters 2 and 3; Disk #2 contains chapter 4; and Disk #3 contains chapters 5 and 6.

**Volume II**

Volume II is more than twice the size of its companion, storming on the scene with over 700 pages at a price tag of $23.95. Clearly, the mathematics used in Volume I are significantly less complex than those used for Volume II. But this does not diminish the value of either volume.

The chapters in Volume II include:

1. least squares approximations
2. series approximation techiques
3. functional approximations by iteration and recursion
4. CORDIC approximation techniques and alternatives
5. table interpolation, differentiation, and integration
6. finding real roots of functions
7. finding the complex roots of functions
8. optimization by steepest descent.

If it sounds to you that Dr. Ruckdeschel is primarily concerned with approximation of things here, you're right! Volume I only scratched the surface of this topic. So if you have ever wanted to approximate a function on a digital computer, this is THE book to get (I might add that EVERY calculation in Basic is an approximation!), although, of course, it is impossible to include approximations for all functions.

The first chapter is on ordinary, garden-variety least squares approximations. This method remains one of the most popular (primarily I think, because people can understand it), although it suffers from inhomogeneous error variance. That is a fancy way of saying that your error varies depending on where you are in your approximation interval. The first chapter on polynomial approximation by least squares is a good place to start, since you can use the fact that the model is linear in the fitting parameters to simplify the whole approximation process.

The chapter builds nicely from one dimensional first order regression (more commonly known as linear regression, or simply regression) up through multidimensional polynomial regression. Section 1.7 of the book clarifies an iterative procedure to minimize the roundoff error that accumulates in the other methods. This culminates in a rousing finale with a powerful routine called PARAFIT, which performs an iterative approximation of the parameters of the arbitarary function. As impressive as PARAFIT is, I think the Marquardt "maximum neighborhood" method is generally superior. Notice that I say "generally", since for any given function a specific method might be better, but in most cases, the Marquardt technique will locate the neighborhood of the root and converge to it faster than other least squares methods.

Chapter 2 deals with series approximations, presenting no less than 15 subroutines for approximations of various functions! Horner's nested-multiplication algorithm is discussed in relationship to Taylor series evaluations, and for an

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example, is applied to the summation of Bessel function series approximations. Other examples are the Chi-square distribution, gamma function, and error function approximation.

Chebyshev polynomials, techniques for using them, and reversion, inversion or shifting of polynomials are represented in the next sections. The former, reversion of a polynomial is simply given a polynomial Y=P(X), and you are able to generate the reverse polynomial X=Q(Y). Polynomial inversion is finding 1/P(X), and shifting a polynomial is a way of moving the expansion point of a polynomial away from a point of large roundoff error. These routines can be quite useful, and the examples and explanations are understandable.

The next section on rational polynomial approximations is not one you will see in many places. The subject of where these approximations come from is avoided, and justifiably so since generation of the coefficients of rational polynomial approximations seems to involve more magic and incantation than anything else. But methods for the evaluation of these approximations are given.

Eleven example routines are presented for approximations by interation and recursion. You can do such interesting things as generate roots of numbers, get tangent and arctangent values, calculate Lengendre polynomial coefficients, etc. The use of recursion for calculation of elliptical integrals and natural logarithms is explored as well. If you don't know what a CORDIC Algorithm is, you are not alone—neither did I. It is an acronym for modified coordinate rotational digital computer algorithm, based on vector rotations, and offers a fast method for the calculation of trigonometric functions, their inverses, as well as some other functions.

The next chapter on table interpolation, differentiation, and integration algorithms is useful because, while computers have made many standard function tables obsolete, some tables still need to be consulted if accuracy is necessary. But what do you do if the value you need lies between the table entries? You read Chapter 6, of course. Methods shown include the Langrange interpolation, the Newton interpolation and the semi-spline curve-fit (Akima's algorithm for the approximation of cubic splines).

Integration of functions from table entries is not as simple as might first appear. You may want to integrate over an area not represented by your table or the entries may not be equally spaced. A very useful general table integration program is given (listing 5.7.1) for just these sorts of problems. Unfortunately, general numerical procedures for the numerical integration and differentiation of functions have been omitted. Perhaps they will appear in a later volume in this series.

Finding the real roots of functions can have problems associated with the various calculation methods, but Dr. Ruckdeschel explains these with clarity presenting algorithms with the routines to show the means to the end. You may find similar problems when finding complex roots of functions; these are discussed in Chapter Seven. The optimization by steepest descent is given in the last chapter. This is a technique used to find the maxima and minima of functions by finding the gradient of the function and going "against the gradient".

The diskettes for Volume II are useful. I did discover a syntax error, but it was easily corrected. As was the case for the Volume I diskettes, you should order the diskttes you need. Each diskette corresponds to a single chapter.

And The Conclusion.....

It's about time someone got around to putting out books such as these. They are well written, and present a fairly complex subject clearly to the interested reader. Of course, the techniques cannot all be discussed in great detail, but further references are given as necessary. This set ought to be owned by every scientist and engineer who uses microcomputers (even ones that don't speak BASIC), as well as students of the physical sciences preparing for scientific work. The books will help them make the connections between mathematics and computers, or between computers and pyhsical science.

VOLUME I contains the more introductory material, but both books are useful from a utility standpoint as well as a pedagogical one. Even if you can sit down and write every routine in these books, why would you want to? They are all right here in two outstanding books that I recommend highly.

Ordering Information

The books are available from Byte Books, 70 Main Street, Peterborough, NH 03458.
The cost of Volume I $19.95 and the cost of Volume II $23.95.

The programs are available on diskette or cassette for most popular microcomputers from Dynacomp, 1427 Monroe Ave., Rochester, NY 14618.
Cassettes are $14.95 each and diskettes are $18.95 each. The three cassettes for Volume I are $39.95 and the three diskettes are $49.95. The eight cassettes for Volume II are $99.95 and the eight diskettes are $129.95.

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Review of CHANCELLOR OF THE EXCHEQUER which appeared in ST. GAME, March/April 1984. Reprinted with permission. All rights reserved.

**Unite or Die**
**Chancellor of the Exchequer**
By R.C. Chiofolo.
*Atari.*

Here's a game that's a prime example of the strategy genre. Detail and depth that few other Atari games can meet are part and parcel of this game. More than a decade of British history is yours to command as the nation's chief financial officer—the Chancellor of the Exchequer.

As this game starts, you are faced with a loosely knit organization of eight geographical regions encompassed by Great Britain. Your object is to industrialize Great Britain by merging these separate regions into a nation. This can only be done by employing machines and people in a manner that supports growth.

To merge regions successfully, people are needed—healthy people to work the mines, harvest the crops, man the steam engines, run the trains, and navigate the ships. Population figures are one type of statistic you must constantly be aware of for each region. There must be enough food to maintain a healthy workforce. Mechanization of the farms is of some help, but in order to build tractors, tools must be made from the raw materials dug from the mines. Everything is interdependent, making each region quite a responsibility. And there are eight regions, in addition to the nation as a whole.

Regions can trade anything with one another, from crops and coal to money itself (at a 10 percent discount rate). Should unemployment rise in a particular region, or a call be received for men-at-arms, the population may be redistributed to better meet specific circumstances. Say, for example, your coal mine in Northumberland possesses three drills, yet only has one population worker toiling in the mines. This means that most of the drills are left unused. Waste! During the allocation sequence, a good idea might be to take surplus workers from transportation and move them into the coal mines to increase productivity, since coal is one of the resources needed to manufacture tools. Tools may then be converted into tractors for the farm, drills for the mines, or steam engines for the factories. As the object of the game is to industrialize, the importance of tool production cannot be stressed enough.

At any time during nonstage play, an analysis program may be run. This program analyzes your moves up to that point and offers handy hints for improving a specific region's statistics. A graph offers visual representation of how well you're playing.

Thoroughly enjoyable. Don't expect to sit down and master this game in half an hour. Involvement could last as long as a day, depending on the level of difficulty you choose. All regional and national information is presented spreadsheet style, with certain graphic characters representing specific items. A brief musical interlude at the beginning of the game only hints at what you might attain—rule Britannia. HGL
Atari, 48K; dsk.

# THE COMPUTER CLINIC
# SECOND EDITION: PROBLEMS

## I. INTRODUCTION

This is the second edition of the COMPUTER CLINIC section of the DYNACOMP catalog. The first edition appeared in (and distributed throughout) Catalog Number 25. It was very well received.

The Atari was chosen as the subject for the first edition because of both our experience and perceived user need. Also, there was only one operating system to deal with, so every Atari owner could use the information in our column.

Since the publication of Catalog Number 25, we have identified a need which should be addressed before going into programming details for other systems; dealing with product problems.

## II. PRODUCT PROBLEMS

DYNACOMP's return rate is well below the industry standard of 5-7%. Of the returns we do receive, only a small fraction is for a refund. This is exceptionally good. However, returns cost us money as well as good will, so we want to reduce our return rate even further.

Therefore, we have prepared a series of COMMENTS, PROBLEMS, and SOLUTIONS based on our mail and phone calls.

This information is not limited to just DYNACOMP products. It should be helpful in general. We may even reduce our competitors' return rates!

## III. COMMENT: READ THIS FIRST!

I don't know about you, but sometimes I try using a product without reading the instructions. Then, "if all else fails," I read the instructions, occasionally too late!

If your DYNACOMP instructions come with a sheet saying "READ THIS FIRST," do it. There must be a reason for the title. Most likely something bad will happen if you don't read those instructions. We must have had some customer feedback to include such a special notice. Following this suggestion may save you much frustration.

## IV. COMMENT: MAKE A BACKUP COPY!

After you have read the instructions (or even before), you will be anxious to get started. Restrain yourself! Make a backup copy of the program diskette or cassette.

Most (not all, though) DYNACOMP products are not copy protected. You can make working copies for your own use by simply employing the copy-making facilities of your computer.

However, before making the copy, write-protect the original diskette or cassette. Even the most experienced computerist occasionally copies to the wrong diskette/cassette when tired or distracted. Cassettes are protected by breaking in (or out) the plastic wings at the back of the cassette case (away from the open end). For 5¼" diskettes, cover the notch with a write-protect tab or adhesive label. For 8" disks, uncover the notch (if there is one).

Making a copy is one of the best things you can do for DYNACOMP. If you later have a disaster, either you will be able to recover from the problem yourself, or we will be able to help you over the phone (or in writing).

## V. COMMENT: DON'T ASSUME THE WORST (THE "IMMEDIATE PROBLEM")

Here is a scenario: You received a DYNACOMP product and you immediately have a problem running it. Please don't instantly assume that DYNACOMP has intentionally sold you a defective product. If we operated that way, you would not have the problem, because we would not be in business. Perhaps you did not read the operating instructions or perhaps missed a step in the loading procedure or perhaps the product got "zapped" in the mail (we test every cassette/diskette/disk before shipment). Or maybe you have equipment problems or you were sent the wrong item. There are many possibilities.

Below is a list of PROBLEMS and SOLUTIONS which relate to the "immediate" problem situation:

- PROBLEM (All)

  No matter what you do, you cannot find the DYNACOMP program on the disk. You have followed the instructions exactly.

  SOLUTION

  I hesitate to ask this, but did you remember to put the DYNACOMP diskette in your disk drive? (Don't laugh!)

- PROBLEM (Apple)

  You insert the DYNACOMP diskette in your Apple disk drive, turn on the computer, and immediately get a SYNTAX ERROR IN LINE 5010 (or some other line). What sort of company sells programs with such obvious program flaws?

  SOLUTION

  Keep in mind that this program does work. DYNACOMP would be crazy to sell a product which had flaws that kept you from even starting. The problem in this case is a bad load. If the Apple finds a program in the directory and cannot start loading it, you get an I/O ERROR. If, however, the Apple starts loading and a failure subsequently occurs, the computer goes haywire and gives the misleading syntax error.

  Take the diskette out, rotate it in its jacket, and try again. If you keep getting the error, return the diskette for replacement.

- PROBLEM (Osborne, Kaypro, Morrow, TRS-80 and Other CP/M-like Machines)

  You turn on your computer, insert the DYNACOMP diskette, and press reset. Nothing happens (or you get a BOOT ERROR).

  SOLUTION

  DYNACOMP's CP/M diskettes and disks are not autoboot. To make them autoboot, we would have to include the CP/M operating system, Microsoft BASIC (in most cases) and an additional royalty charge (for DIGITAL RESEARCH and MICROSOFT) of about $200.00! Therefore, you must follow the loading notes either contained within the DYNACOMP manual or on the "CP/M LOADING NOTES" sheet.

- PROBLEM (CP/M Machines)

  You received the popular DYNACOMP STARBASE 3.2 program. You boot your system to get the A > prompt. You type STARBASE and press RETURN. You get a question mark and another A prompt. In fact, no matter what name you use, you get the same response!

  SOLUTION

  STARBASE 3.2 is written in BASIC. Microsoft BASIC must be loaded first. This is explained in the CP/M LOADING NOTES or in the manual. That will teach you not to follow the loading instructions!

- PROBLEM (CP/M Machines)

  You purchased CRANSTON MANOR and you are itching to run it. CP/M and BASIC have been loaded. You type LOAD "CRANSTON" and get a FILE NOT FOUND ERROR. You figure that you are not using the right name and so you type FILES (and press RETURN). This gives you the names of the files on the disk. You find one called ADV.COM. Now you try LOAD "ADV.COM" and get a DIRECT STATEMENT IN FILE ERROR. Nuts!

  SOLUTION

  One of three things happened here: (1) You did not read the instructions and simply loaded BASIC and tried to work from there, (2) DYNACOMP inadvertently (our apologies!) included the CP/M LOADING NOTES sheet which should only be sent with BASIC programs, (3) you read the North Star Loading Notes and got confused. CRANSTON MANOR is a machine language program which does not use BASIC. It is loaded by typing ADV (and pressing RETURN) in response to the A> prompt.

- PROBLEM (CP/M Machines)

  You try loading the program from CP/M (a .COM file) or BASIC (a .BAS file) and get a BDOS ERROR ON A:, or the system just hangs (e.g., Kaypro). Also, you can't copy the disk.

  SOLUTION

  This is a tough one. Sometimes rotating the disk in its jacket and trying again will help.

- PROBLEM (North Star)

  You purchased a DYNACOMP diskette for a North Star system and you cannot even get a directory of the programs.

  SOLUTION

  By far, the return rate for North Star programs is the largest for any computer system handled by DYNACOMP. There are many things which can trip you up.

  First, there are several North Star models and two general (and incompatible) operating systems. There is North Star DOS (and GDOS) which works with North Star BASIC, and there is CP/M with Microsoft BASIC. Compound this with Single and Double Density! Which do you have? DYNACOMP supplies four different formats for North Star systems.

| OPERATING SYSTEM | MDS DOS DISK Single Density | MDS DOS DISK Double Density | SYSTEM HORIZON DOS | SYSTEM HORIZON CP/M | ADVANTAGE GDOS | ADVANTAGE CP/M |
|---|---|---|---|---|---|---|
| Single Density DOS & NS BASIC | YES | YES | YES | NO | NO | NO |
| Double Density DOS & NS BASIC | NO | YES | YES | NO | YES | NO |
| Single Density CP/M & Microsoft | NO | NO | NO | YES | NO | NO |
| Double Density CP/M & Microsoft | NO | NO | NO | YES | NO | YES |

  The single most common source of problems with software for the North Star is specifying the wrong format. If you have just GDOS (and not NS BASIC), none of DYNACOMP's programs will work. If you have CP/M only, then only our programs which need CP/M (only) will work: CRANSTON MANOR, IRONCLADS, DATA RETRIEVAL SYSTEM and DYNAFORTH. If you have CP/M and Microsoft BASIC, all of our CP/M programs will work. If you have GDOS and NS BASIC, then all of our North Star (with no qualifier) programs will work. If you have CP/M and North Star BASIC, that is not the same as having CP/M and Microsoft BASIC. What did you order and

what did you get?

You can determine what you received by looking at the DYNACOMP diskette. First, there should be a yellow dot indicating North Star format. Next, there will be a "CP/M" either on the dot or on the label if it is a CP/M format. Third, there will be a "D.D." on the label if the diskette is Double Density. We ship what you order (or try to)! Does the diskette match your system? Are you following the loading notes which match your system?

- PROBLEM (North Star Advantage)

  You have determined tht you have ordered the right software for your Advantage (no mean feat!). Now you get a "I" ERROR.

  SOLUTION

  Bad news! You are having fundamental disk reading problems. Here is what we know. First, you cannot load Single Density diskettes on an Advantage. Second, even though our Double Density diskettes can be easily read on Double Density Horizons (we know this from the return rate), there seems to be quite some randomness in how well they can be loaded on Advantage. Some of our Advantage customers have no problems. Others have to get replacements two or three times before success. This suggests some variability among the Advantages. We have not gotten any word back from North Star on this. All that can be done is to try again with a replacement.

- PROBLEM (TRS-80)

  You have a Model III or Model IV TRS-80 and simply cannot load the DYNACOMP tape or diskette.

  SOLUTION

  All DYNACOMP products for the TRS-80 are in Model I format and can, therefore, be read by Model I, III, and IV machines. For CLOADING cassettes on a Model III or IV, use the (L)ow band rate. For those first time cassette users, remember to list the program after loading. If there is "garbage" after some point, try CLOADING again at a different volume level. Remember, we CLOADed this tape ourselves without any problems.

  Model III and Model IV disk users should use their CONVERT utility to convert the Model I DYNACOMP diskette to a Model III format diskette. You should have received instructions with the DYNACOMP diskette on how to do this. REMEMBER TO PUT A WRITE-PROTECT TAB ON THE DYNACOMP DISKETTE BEFORE CONVERTING. Model IV Users: You must run in the Model III mode.

- PROBLEM (Computers not mentioned in the DYNACOMP Catalog)

  You have a UVWXYZ-100 (or some other) computer which DYNACOMP does not support. Your dealer tells you to buy the 8" CP/M version of the DYNACOMP product so that he can "download" it for you. You buy it, he downloads it, and it doesn't work.

  SOLUTION

  DO NOT CALL DYNACOMP!!! First, go back to your dealer and make sure that the original verison worked and that you know how to use it in its original form. We can help you there; but, after you have moved the program to a machine we have no experience with, there is not much DYNACOMP can do. In 90% of the cases involving downloading problems, the dealer either had an error in transfer or left out files. In the remaining 10%, the wrong BASIC is being used or there are cursor control problems (which are solvable).

- PROBLEM (All)

  The program worked fine. Then you (or a friend or a dealer) made a few "simple" changes. Now it doesn't work.

  SOLUTION

  From DYNACOMP's perspective, it is unfair to ask us to try to figure out what went wrong when you modified one of our programs. It is like purchasing a radio -- open the box, make changes, and you void the warranty.

  In the case of one program (PERSONAL FINANCE SYSTEM), the manual indicates how the program may be altered for two drives. Experienced programmers have difficulty using those instructions. Beginners have a great deal of difficulty. Don't make changes unless you "really" know what you are doing.

- PROBLEM (All)

  You purchase one of the texts, BASIC SCIENTIFIC SUBROUTINES, VOLUMES I AND II. You then type in some of the subroutines and have a problem in running them.

  SOLUTION

  As far as we know, there is only one programming error, and it is in Volume I. A line 2000 is referenced when it should be 1000. DYNACOMP has these same programs available on cassette, diskette, and disk, and they have been tested. You should either check your typing or purchase a copy from DYNACOMP. This is less expensive than submitting your listings to DYNACOMP's consulting service for proofreading.

- PROBLEM (Commodore)

  You have a Commodore 8032 with 8050 (or 8250?) disk drives. You purchased PET/CBM diskettes from DYNACOMP, and you cannot read them at all. There is not even any indication of program content.

  SOLUTION

  Commodore disk drives use one of two different disk formats -- 8050 compatible and 4040 compatible. The 4040 compatible drives outnumber the 8050's by a factor of at least 20:1. DYNACOMP supports the 4040 (1531, 2040, etc.). In fact, all DYNACOMP production is now done on 1531 disk drives.

  If you want a DYNACOMP program for your 8050 drive and have a Commodore cassette recorder, a cassette version may be special-ordered from DYNACOMP and loaded onto your disk.

- PROBLEM (Atari)

  You turn on your Atari disk drive, insert your DYNACOMP diskette and turn on your computer. You then get an ERROR 19.

  SOLUTION

  There is not enough memory in your computer to load the program. Do you have at least the minimum amount of memory indicated in the manual (or catalog)? If so, you probably are experiencing bad contact problems with your memory boards. Jiggling them may help.

- PROBLEM (Commodore)

  You followed the loading procedure for Commodore cassette or disks and quickly got an error when running the program.

  SOLUTION

  Commodore products do not automatically display I/O ERROR messages as other computers do. If you LIST the program, it may look proper up to some point, after which "garbage" appears. Try loading again (remove diskette, rotate in jacket, etc.).

- PROBLEM (Commodore)

  You follow the indicated loading procedure and the program appears to be loading properly (PROGRAM FOUND message appears, etc.). You type RUN and nothing happens. You type LIST and nothing is there!

  SOLUTION

  The chances are very good that this program was made on a Commodore 64. You should read the PET ADDENDA notes and peform the required POKE'S. The program has loaded, starting at 2048 in RAM. However, your model Commodore thinks it starts at 1024. That has to be changed.

- PROBLEM (Commodore)

  You have received your DYNACOMP diskette for the Commodore, but do not know the program name to use for loading.

  SOLUTION

  Usually the name to be used is given in the documentation. To find the names of the files on a diskette, type LOAD "$",8. Then type LIST.

- PROBLEM (All)

  You have followed the directions for loading "exactly," but you keep getting a FILE NOT FOUND (Microsoft BASIC), PROGRAM TOO LARGE or NOT FOUND (North Star BASIC), or ? (CP/M or DOS). You have spelled the program name "exactly" as shown in the documentation or on the disk directory.

  SOLUTION

  You are in good company with this one. The technical staff at Osborne Computers called us with this problem once. We went through the loading steps, even spelling out the commands. The program was in the directory, but they just could not load it! However, after some grilling, we found that what we told them to type was LOAD "PFS" and what they did type was load "pfs". They did not type the name "exactly" as it appeared in the directory. Capital letters did count (even though the Osborne Manual said otherwise).

  Here are some other variations:

| THE MANUAL SAYS TO TYPE | THE USER TYPES |
|---|---|
| LOAD "STARBASE" | LOAD "STAR BASE" (Microsoft) |
| LOAD "STARBASE" | LOAD STARBASE (Microsoft) |
| LOAD "STARBASE" | "LOAD "STARBASE"" (Microsoft) |
| LOAD STARBASE | LOAD "STARBASE" (NS, Apple) |
| LOAD "STARBASE",8 | LOAD STARBASE (Commodore) |
| LOAD "STARBASE",8 | LOAD "STARBASE" (Commodore) |

  This is exactly the problem in a sizable fraction of the calls we get.

## VI. COMMENT: THE "BUG"

The DYNACOMP technical group receives information on one or two true "bugs" each week; often less, and usually minor. Considering that DYNACOMP has more than 400 titles in the field with some titles having close to 20 versions, this rate is gratifyingly low. However, that does not mean we do not get many calls about perceived bugs; about 10% of our problem calls do concern these nasty animals. Here are the popular ones.

- PROBLEM (All)

  In the midst of a long data entry sequence, the user is asked to type in three numbers separated by commas. An error is made and a RE-DO FROM START message appears. The call: "Have I lost all of my data because I have to start the program over?"

  SOLUTION

  No. The message simply means that you have to enter the three numbers again, starting with the first.

A variation on this theme is when you input four numbers instead of the three requested. An EXTRA IGNORED message appears and the program continues. Or, you enter two of the three and a lone question mark appears, prompting for the third.

- PROBLEM (All Computers with Lower Case Keyboards)

  This problem is best described by the example which most frequently occurs. The computer prompt is:

  DO YOU WISH INSTRUCTIONS (Y/N):

  You answer "n". One of two things happens. The prompt repeats or you get the instructions even though you did not want them.

  SOLUTION

  Whenever you encounter a prompt, check to see if a sample response is shown in parentheses. In this case, a "N" is the acceptable response, not an "n". In general, DYNACOMP programs use CAPITAL LETTERS for command responses.

- PROBLEM (All)

  Another example will make the point regarding prompts. This one is taken from BACKGAMMON 2.0. The prompt is:

  ` MOVE (FROM,TO):

  Try as you may, you cannot get "24-17" to work.

  SOLUTION

  If the prompt were MOVE (FROM-TO), the response would work (if a legal move). In this case, "24,17" is the right format. Also, remember to press RETURN (or ENTER) to complete the response.

  This takes care of half of the BACKGAMMON 2.0 problems. Almost all of the rest are related to illegal moves.

- PROBLEM (Commodore)

  You are running a number crunching program which, at one point, loads data from the disk. This point has passed without incident. The program then crashes with a DIVIDE BY ZERO ERROR, an OVERFLOW, or gives a ridiculous result.

  SOLUTION

  This is the classic Commodore (cassette or) disk read error. The program went to the disk for the data, couldn't read it (the file was empty, not there, disk missing, etc.), and continued anyway! Because it didn't read the data as it was supposed to, it set the data to zero, and then used those zero values. No other computer that we know of will do this!
  One way to catch this error is to watch the disk drive light. If a disk read/write error occurs, the error light will flash. However, this light is cancelled by the next write operation.

  Of all the Commodore drives, the 1541 seems to be most prone to this type of problem.

- PROBLEM (CP/M Machines)

  You boot CP/M and run BASIC. You then put the DYNACOMP disk in Drive A and LOAD and RUN the program. A while later you get a BDOS ERROR ON DRIVE A:R/O. You repeat the procedure and get the same error at the same point.

  SOLUTION

  What happened was that either a write-protect tab was left on the diskette or you forgot to type RESET (don't press RESET; that will reboot the machine) to let CP/M know that the diskette in Drive A has been changed.

- PROBLEM (CP/M Machines)

  You have booted CP/M. Now you insert the DYNACOMP diskette in Drive A and type ADV [CRANSTON MANOR example]. The program works fine until you get a 52 ERROR (or BDOS ERROR ON A:R/O).

  SOLUTION

  This is the same problem as above. You must let the computer know that a new disk is in Drive A. In this case, use a CONTROL-C.

- PROBLEM (Atari XL)

  You boot and run the DYNACOMP program without incident. Then, one day you get an ERROR-162 (disk full). You go to DOS and check the directory. You find that there are still 40 blocks free! Is the disk full or isn't it?

  SOLUTION

  The Atari XL line of computers do this for some reason. The solution is to boot your computer on the special diskette which Atari now provides to convert your operating system to that of the Atari 800. If you do not have that diskette, one may be obtained from DYNACOMP.

- PROBLEM (Atari, Single Density CP/M)

  (This problem happens most often with BRIDGE MASTER since the disk is nearly full on Single Density systems.) You have been running the program for some time and one day you get ERROR-162 (Atari disk full) or DISK FULL (CP/M).

  SOLUTION

  Erase some files (see your computer manual). For BRIDGE MASTER, the file called FILES (or possibly INIT) may be removed (from your copy - NOT the master). You may also remove old data (e.g., score) files.

- PROBLEM (All - BRIDGE MASTER)

  BRIDGE MASTER is a very large and complicated program. In fact, BRIDGE MASTER is broken down into several parts which call one another. Also, data files are built during the course of play and closed at the end. That leads to a potential problem.

  Here is the usual story. You were playing bridge and got a bad hand. Instead of playing it through (as you would have to in real life), you abort the program with BREAK, CONTROL-C, RESET, turning the computer off, etc. Then, the next time you play, you get an error indicating you ran out of data; e.g., INPUT PAST END (CP/M), I/O ERROR (Apple), ERROR-144 (Atari), etc. (NOTE: No error message occurs for the Commodore - the game will go crazy later instead.)

  SOLUTION

  What happened was that the program was interrupted before certain data files were completed; the files are wrecked. You should stop the program only when you are in the main menu.

  To rebuild the files, we have included a program called FILES (or INIT). LOAD and RUN this program. Or, make a new copy from your master (remember, we told you to do that in Section IV!).

- PROBLEM (CP/M)

  You have purchased TAX OPTIMIZER and know how to boot CP/M and run BASIC so you don't read the loading instructions. Then one day you get a BAD FILE NUMBER ERROR or similar message.

  SOLUTION

  This is a common error. Even though the manual spells out how to load BASIC for the CP/M version of TAX OPTIMIZER and what will happen if the instructions are not followed (usually the caller with the problem insists that he/she followed the instructions!), a step is often skipped.
  Microsoft BASIC's default value for the maximum number of open files is four. TAX OPTIMIZER uses ten. To allow for ten files, you must load BASIC using MBASIC/F:10 instead of just MBASIC.

- PROBLEM (All Computers Having Printers)

  You have purchased MANAGEMENT SIMULATOR. You have a printer. The program mentions something about printer format, as you choose it. The output does not go to your printer, but instead scrolls off the screen.

  SOLUTION (Read if you want printer output)

  As stated in the manual, MANAGEMENT SIMULATOR supports a printer format, but does not direct the output away from the screen to the printer. The printer format scrolls, so if you choose it, the information printed scrolls off your screen.

  Some people have computer systems which have printing terminals (e.g., DECWRITER, DIABLO, etc.). For them, this format is necessary.

  If your computer has both a screen and a printer, there is usually a way to direct all screen output to the printer (you would use the printer format in that case). For example, Apple output can be usually sent to the printer by exercising the PR#1 command before running the program. See your Interface Card Manual. For the Osborne, the set-up program may be used. For the Atari, there is a POKE (see Catalog Number 25, page 28). Consult the manual which came with your computer, or your dealer.

- PROBLEM (BRIDGE MASTER)

  You are new to the game of bridge, or new to computers. You have BRIDGE MASTER and get an ILLEGAL BID or ILLEGAL LEAD ERROR. Or you simply do not know how to place a bid or specify a card.

  SOLUTION

  You must bid in ascending order. If you want to bid one Spade, type 1S and press RETURN (or ENTER). If, say, a two of Clubs (2C) bid had been made previously, this bid is illegal.

  To play a card, type the one letter corresponding to the value, followed by the suit (e.g., 4 of Hearts - 4H; 10 of Clubs - TC; Ace of Spades - AS). If you do not have that card in your hand or are not following suit (when possible) or make an error, you will get the error message.
  The bidding, play, and layout of the hands follow the conventions shown in all bridge books and bridge columns; e.g., see the Sunday Times.

  The manual which comes with BRIDGE MASTER is designed only to show how to operate the program, not how to play bridge. There are many books on the subject of Bridge; see your local book store or library.

- PROBLEM (All)

  You have a DYNACOMP program which mentions an optional printer output, but you do not have a printer. How do you get a hard copy?

  SOLUTION

  It is surprising how often we get this question. The answer is simple...no printer, no hard copy (no miracles).

# DYNACOMP GIFT SUGGESTIONS

Many call or write DYNACOMP to purchase software not for their own use, but as presents for children, relatives and friends. In some cases the purchaser is not well acquainted with computers and may have some difficulty in choosing amongst the many products DYNACOMP offers. Therefore we have prepared the following suggestion list of popular and well accepted offerings (all program prices are for 5¼" diskettes).

| | |
|---|---|
| The Universal Pleaser: | A well built plastic storage box containing 10 quality 5¼" diskettes: $19.95.<br>Storage boxes sold separately for $2.95/each. |
| The Very Young (2-7): | CHILDREN'S CARROUSEL (Apple): $19.95<br>HODGE PODGE (Apple, TRS-80, Atari): $18.95<br>DOODLE DRAWER (Atari): $18.95 |
| The Young Gamer: | VALLEY OF THE KINGS (Atari): $29.95<br>CACTUS LEAGUE BASEBALL (Atari): $19.95<br>SUPER TANK ATTACK (Atari): $21.95 |
| The Older Gamer: | LEIPZIG 1813 (Atari): $33.95<br>WATERLOO 1815 (Atari): $33.95<br>CRANSTON MANOR (5¼" and 8" CP/M*): $19.95<br>CHESS MASTER (TRS-80, 5¼" and 8" CP/M*): $23.95<br>IRON CLADS (5¼" and 8" CP/M*): $29.95<br>STARBASE 3.2 (All Computers handled by DYNACOMP): $17.95 |
| The Card Player: | BRIDGE MASTER (All computers handled by DYNACOMP): $29.95<br>EUCHRE (Atari): $21.95 |
| The Experimenter: | EBASIC (5¼" and 8" CP/M*): $29.95<br>GENESIS (Apple): $49.95<br>DYNAFORTH (5¼" and 8" CP/M*): $74.95<br>TURNKEY (Atari): $19.95<br>ELIZA (5¼" and 8" CP/M*): $19.95 |
| The Graphics Nut: | PLAYER MISSILE GRAPHICS TOOL KIT (Atari): $29.95<br>GRAFIX (TRS-80): $19.95<br>THE SHAPE MAGICIAN (Apple): $29.95 |
| The Home Accountant: | PERSONAL FINANCE SYSTEM (All computers handled by DYNACOMP): $39.95<br>BUDGET MODEL ANALYZER (Atari): $23.95 |
| The Market Dabbler: | MICROCOMPUTER STOCK PROGRAM (All computers handled by DYNACOMP): $59.95<br>STOCK MASTER/STOCK PLOT (Apple): $59.95<br>STOCKAID (Atari): $29.95 |
| The Disk Collector: | DFILE (Atari, Osborne, North Star): $19.95 |

If you cannot decide on a particular product, give a DYNACOMP *GIFT CERTIFICATE*. You may purchase gift certificates in $5 multiples (e.g., $5, $10, $15, and so on). Each certificate is nicely printed, has the dollar amount embossed, and is valid for one year from date of purchase.

*5¼" and 8" CP/M includes Osborne, Super Brain, Altos, NEC, Morrow, North Star, Kaypro, IBM PC, Heath Zenith Z-100, Canon AS-100, Cromemco, Xerox 820, etc.

# DYNACOMP's WARRANTY

**MAGNETICALLY DEFECTIVE MERCHANDISE**

If, within 30 days of your purchase, you find the DYNACOMP cassette/diskette/disk to be mechanically or magnetically defective, you may return the original cassette/diskette/disk to your dealer (if purchased there) or directly to DYNACOMP for replacement. If the fault is due to an original defect in materials or workmanship, DYNACOMP will replace the cassette/diskette/disk free of charge, postpaid.

If, within one year of purchase, you have in any way magnetically damaged the cassette/diskette/disk, DYNACOMP will replace it for a nominal recopying charge of $5.00 plus $2.00 for shipping and handling. If you have physically damaged it, there will be an additional nominal charge for replacing the media. See the instructions below regarding what and how to ship to DYNACOMP.

**UNSUITABLE MERCHANDISE**

The vast majority of software companies do not warrant the suitability of their software. We are different. DYNACOMP has gone to great lengths (literally!) to describe its products in the DYNACOMP catalog accurately and in sufficient detail to ensure that the customer knows what he or she is purchasing. However, if you purchase a DYNACOMP product and are having a problem or are dissatisfied with it, here is what you should do:

- Contact DYNACOMP. You may do this by writing to DYNACOMP directly or by calling one of the technical service lines: (716) 442-8960 or (716) 442-8731. Problems get first priority in the technical support group and they will do whatever they can to help you. Usually the problem turns out to be a bad cassette/diskette/disk, or a misunderstanding with respect to the documentation, and is easily remedied.
- If a refund is in order, you will be sent a Copyright Infringement Agreement which is to be signed and included with the returned merchandise (see the shipping instructions below). This agreement simply ensures that you have not retained any copies of the software, or have permitted others to obtain copies from yours.

  When DYNACOMP receives the returned merchandise accompanied by the signed agreement, you will be issued a refund for the purchase price of the material minus a 25% restocking fee.

**VARIATIONS ON THE REFUND THEME**

1. If, instead of a refund, you wish to *exchange* for another product of equal or greater price, you must still sign and return the Copyright Infringement Agreement with the returned merchandise. However, in this case there is no restocking fee, and the charge is only for the difference in purchase prices, plus $3.00 for shipping and handling.
2. If you received a quantity discount for purchasing three or more programs and your return affects this discount, it will be factored into your refund.
3. If you purchased from a dealer and wish a refund, you must make arrangements with that dealer according to his policy.

**SHIPPING INSTRUCTIONS FOR RETURNS**

1. Replacement of a defective cassette/diskette/disk. Return just the defective item, not the documentation. Include your sales receipt and a note stating the problem. Carefully pack it (preferably using the protective packaging which it was originally delivered in). *Do not* send unprotected cassettes/diskettes/disks through the U.S. mail (or UPS). *DO NOT FOLD, DO NOT BEND, FRAGILE*, etc. markings do not appear to ensure careful handling. Ask yourself: Would this package survive a 3,000 mile trip in your car trunk in a bag full of groceries?
2. Return of merchandise for a refund. Pack as indicated above, and include your sales receipt, a note describing the problem, and a signed copy of the Copyright Infringement Agreement.

## ORDER FORM

| PROGRAMS | COMPUTER SYSTEM | PRICE |
|---|---|---|
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| Deduct 10% when ordering 3 or more programs<br>20% when ordering 5 or more programs | |
| New York residents add 7% sales tax | |
| Postage and handling | $3.00 |
| Foreign orders add 15% postage | |
| TOTAL | |

SEND TO:

Name _____

Address _____

City/State _____ Zip Code _____

IF PAYING WITH MASTER CARD, EUROCARD, OR VISA:

Card Number _____

Expiration Date _____

SEND TO: **DYNACOMP, Inc., 1064 Gravel Rd., Webster, New York, 14580**
(800) 828-6772 Toll Free Order Phone (outside NY only)
(800) 828-6773 Toll Free Order Phone (outside NY only)
(716) 671-6160 Office Phone (9 a.m.'til 5 p.m. E.S.T.)
(716) 671-6167 24-hour order and message phone.

## ORDER FORM

| PROGRAMS | COMPUTER SYSTEM | PRICE |
|---|---|---|
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| Deduct 10% when ordering 3 or more programs<br>20% when ordering 5 or more programs | |
| New York residents add 7% sales tax | |
| Postage and handling | $3.00 |
| Foreign orders add 15% postage | |
| TOTAL | |

SEND TO:

Name _____

Address _____

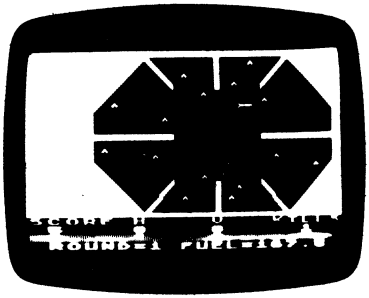
City/State _____ Zip Code _____

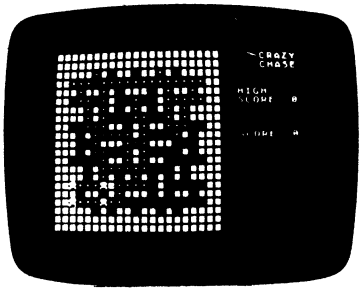
IF PAYING WITH MASTER CARD, EUROCARD, OR VISA:

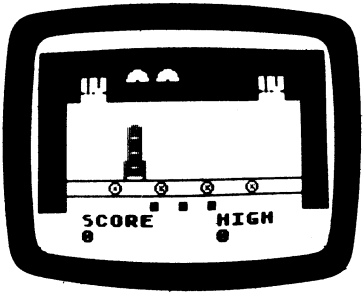
Card Number _____

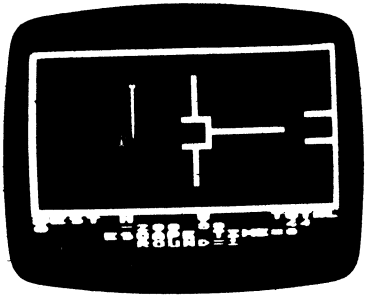
Expiration Date _____

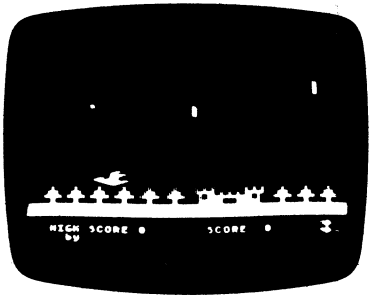
SEND TO: **DYNACOMP, Inc., 1064 Gravel Rd., Webster, New York, 14580**
(800) 828-6772 Toll Free Order Phone (outside NY only)
(800) 828-6773 Toll Free Order Phone (outside NY only)
(716) 671-6160 Office Phone (9 a.m.'til 5 p.m. E.S.T.)
(716) 671-6167 24-hour order and message phone.

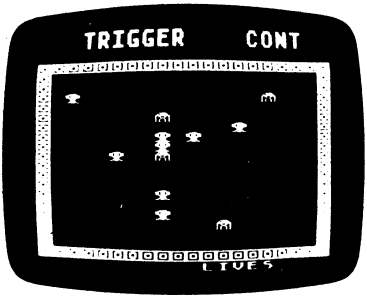


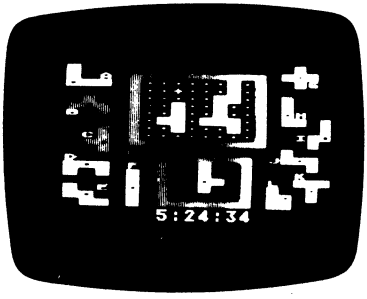

CRAZY
CHASE


SCORE
HIGH




HIGH SCORE
SCORE


TRIGGER
CONT
LIVES


5:24:34

# CATALOG FREE SUBSCRIPTION RENEWAL FORM

**Look at the mailing label on the back of this page. If there is an asterisk(*) in front of your name, this may be your last free DYNACOMP catalog.**

If you wish to receive or continue to receive DYNACOMP catalogs, please fill out and return this form. Doing so will help DYNACOMP better serve your software and supplies needs.

If you are placing an order, you do not need to fill out this form.

INSTRUCTIONS:
1. Fill out Information Block #1.
2. If the Address label on the back of this page is correct, skip to step 4, otherwise go to step #3.
3. Fill out Information Block #2.
4. Fold and staple so that the side with the postage stamp is visible.
5. Mail. Don't forget to put a 20¢ stamp where shown.

| | |
|---|---|
| **Information Block # 1** | **Computer System:** _____<br>**Application(s):** _____ |
| **Information Block # 2** | **Name:** _____<br>**Address:** _____<br>_____<br>**City, State, ZIP:** _____ |

**Fold along the dashed line**

**Place 20¢ Stamp Here**

**cut along this line**

DYNACOMP, Inc.
P.O. Box 18129
Rochester, New York 14618

**Attention: Catalog Dept.**

**— staple here —** **— staple here —** **— staple here —**

**DYNACOMP, Inc.**
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Webster, New York 14580

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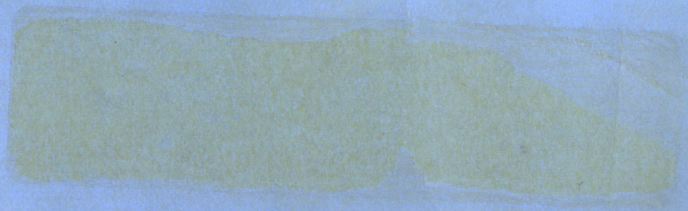
Deliver to occupant or